A
CONVERSATION
ON THE
Plurality of Worlds.

Bovier de

Tranſlated from the French of M. De FONTENELLE. (B.)

TO WHICH IS ADDED

Mr. ADDISON's Defence
OF THE
NEWTONIAN PHILOSOPHY.

* * *

LONDON:

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D. EVANS, and R. NEWTON.

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BRITISH MUSEUM

TO
A Young Lady,
WITH
Fontenelle's Plurality of Worlds.

IN this ſmall work all Nature's wonders ſee,
The ſoften'd features of philoſophy.
In truth by eaſy ſteps you here advance,
Truth as diverting as the beſt romance.
Long had theſe arts to ſages been confin'd,
None ſaw their beauty, till by poring blind;
By ſtudying ſpent, like men that cram too full,
From Wiſdom's feaſt they roſe not cheer'd, but dull.
The gay and airy ſmil'd to ſee them grave,
And fled from Wiſdom like Trophonius' cave:
Juſtly they thought they might thoſe arts deſpiſe,
Which made men ſullen, ere the could be wiſe.
Brought down to ſight, with eaſe you view them here;
Though deep the bottom, yet the ſtream is clear.
Your flutt'ring ſex, ſtill, valued ſcience leſs;
Careleſs of any but the arts of dreſs.
Their uſeleſs time was idly thrown away
On empty novels, or ſome new-born play.
The beſt, perhaps, a few looſe hours might ſpare,
For ſome unmeaning thing, miſcall'd a pray'r.

In vain the glittering orbs, each ſtarry night,
With mingled blazes ſhed a flood of light;
Each nymph with cold indiff'rence ſaw them riſe;
And, taught by fops, to them preferr'd her eyes.
None taught the ſtars were ſuns ſo widely ſown,
None dream'd of other worlds, beſides our own.
Well might they boaſt their charms, when ev'ry fair
Thought this world all, and her's the brighteſt here.
Ah! quit not the large thoughts this book inſpires
For thoſe thin trifles which your ſex admires;
Aſſert your claim to ſenſe, and ſhew mankind,
That reaſon is not to themſelves confin'd.
The haughty belle, whoſe beauty's awful ſhrine
'Twere ſacrilege t' imagine not divine,
Who thought ſo greatly of her eyes before,
Bid her read this, and then be vain no more.
How poor ev'n you, who reign without controul,
If we except the beauties of your ſoul!
Should all beholders feel the ſame ſuprize;
Should all who ſee you, ſee you with my eyes;
Were no ſick blaſts to make that beauty leſs;
Should you be what I think, what all confeſs:
'Tis but a narrow ſpace thoſe charms engage;
One iſland only, and not half an age!

THE

PREFACE.

I AM pretty much in the ſame caſe with Cicero, when he undertook to write of philoſophical matters in the Latin tongue, there being, then, no books upon that ſubject, but what were in Greek: He was told, that ſuch an attempt would be uſeleſs; becauſe, thoſe who were lovers of philoſophy, would rather take the pains to ſearch for it in Greek writers, than make uſe of Latin ones, which treated of it but at ſecond hand; and that thoſe who had no reliſh for this ſcience, would never trouble their heads with either Greek or Latin. To theſe objectors, he anſwered, it would happen quite otherwiſe; for, ſays he, the great eaſe people will find in reading Latin books, will tempt thoſe to be philoſophers who are none, and they who already are philoſophers, by reading Greek books, will be very glad to ſee how the ſubject is handled in Latin.

Cicero might with good reaſon anſwer as he did, becauſe the excellency of his genius, and the great reputation he had acquired, warranted the ſucceſs of all he wrote: But in a deſign, not much unlike his, I am far from having thoſe grounds of confidence which he had. My purpoſe is to diſcourſe of philoſophy, but not directly in a philoſophical manner; and to raiſe it to ſuch a pitch, that it ſhall not be too dry and inſipid a ſubject to pleaſe gentlemen; nor too mean and trifling to entertain ſcholars. Should I be told (as Cicero was) that ſuch a diſcourſe as this would not pleaſe the learned, becauſe it cannot teach them any thing; nor the illiterate, becauſe they will have no mind to learn; I will not anſwer as he did: It may be, endeavouring to pleaſe every body, I have pleaſed no body; now, to keep a medium betwixt two extremes, is ſo very difficult, that, I believe I ſhall never deſire to put myſelf a ſecond time to the like trouble.

If I ſhould acquaint thoſe who are to read this book, and have any knowledge of natural philoſophy, that I do not pretend to inſtruct, but only to divert them; by repreſenting to their view, in a gay and pleaſing dreſs, what they have already ſeen in a more grave and ſolid habit: Not but they, to whom the ſubject is new, may be both diverted and inſtructed: The firſt will act contrary to my intention, if they look for profit, and the laſt, if they ſeek for nothing but pleaſure.

I HAVE choſen that part of philoſophy which is moſt likely to excite curioſity; for I think nothing concerns us more, than to enquire how this world, which we inhabit, is made; and whether there be any other worlds like it, which are alſo inhabited as this is? But after all, it is at every body's diſcretion, how far they will run their diſquiſitions: thoſe who have any thoughts to loſe, may throw them away upon ſuch ſubjects as theſe; but, I ſuppoſe, ſuch as can employ their time better, will not be at ſo vain and fruitleſs an expence.

IN theſe diſcouſes, I have introduced a Lady, to be inſtructed in things of which ſhe never heard; and I have made uſe of this fiction, to render the book more acceptable, and to give encouragement to gentlewomen, by the example of one of her own ſex, who without any ſupernatural parts, or tincture of learning, underſtands what is ſaid to her; and without any confuſion, rightly apprehends what vortexes and other worlds are: And why may not there be a woman like this imaginary Marchioneſs, ſince her conceptions are no other than ſuch as ſhe could not chuſe but have?

To penetrate into things either obſcure in themſelves, or but darkly expreſſed, requires deep meditation, and an earneſt application of the mind; but here, nothing more is requiſite than to read, and to imprint an idea of what is read, in the fancy, which will certainly be clear enough. I ſhall deſire no more of the fair ſex, than that they will peruſe this ſyſtem of philoſophy, with the ſame application that they do a romance or novel when they would retain the plot, or find out all its beauties. It is true, that the ideas of this are leſs familiar to moſt ladies, than thoſe of romances, but they are not more obſcure; for at moſt, twice or thrice thinking, will render them very perſpicuous.

I HAVE not compoſed an airy ſyſtem, which has no foundation at all: I have made uſe of ſome true philoſophical arguments, and of as many as I thought neceſſary; but it falls out very luckily in this ſubject, that the phyſical ideas are in themſelves very diverting; and as they convince and ſatisfy reaſon, ſo at the ſame time they preſent to the imagination a proſpect which looks as if it were made on purpoſe to pleaſe it.

When I meet with any fragments which are not of this kind, I put them into ſome pretty ſtrange dreſs: Virgil has done the like in his Georgics; when his ſubject is very dry, he adorns it with pleaſant digreſſions: Ovid has done the ſame in his Art of Love; and though his ſubject be of itſelf very pleaſing, yet he thought it tedious to talk of nothing but love. My ſubject has more need of digreſſion than his, yet I have made uſe of them very ſparingly, and of ſuch only, as the natural liberty of converſation allows: I have placed them only where I thought my readers would be pleaſed to meet with them; the greateſt part of them are in the beginning of the book, becauſe the mind cannot at firſt be ſo well acquainted with the principal ideas which are preſented to it; and, in a word, they are taken from the ſubject itſelf; or, as near to it as is poſſible.

I HAVE related nothing concerning the inhabitants of the ſeveral worlds, which may ſeem fabulous, or chimerical; but have ſaid whatever may be reaſonably thought of them; and the viſions which I have added, have ſome real foundation; what is true, and what is falſe are mingled together, but ſo as to be eaſily diſtinguiſhed: I will not undertake to juſtify ſo fantaſtical and odd a compoſition, which is the principal point of the work, and yet, for which, I can give no very good reaſon.

THERE remains no more to be ſaid in this place, to a ſort of people, who perhaps will not be eaſily ſatisfied, though I have good reaſons to give them; but, that the beſt which can be given will not ſatisfy them. Thoſe are the ſcrupulous perſons, who imagine, that the placing inhabitants any where, but upon the earth, will prove dangerous to religion: I know exceſſively tender ſome are in religious matters, and therefore I am very unwilling to give any offence, in what I publiſh, to people whoſe opinion is contrary to that I maintain: But religion can receive no prejudice by my ſyſtem, which fills an infinity of worlds with inhabitants, if a little error of the imagination be but rectified. When it is ſaid the moon is inhabited, ſome preſently fancy that there are ſuch men as ourſelves; and prieſts without any more ado think him an atheiſt, who is of that opinion. None of Adam's poſterity, cry they, ever travelled ſo far as the moon; nor were any colonies ever planted in that region. I grant it. The men in the moon are not the ſons of Adam: And here again theology would be puzzled, if there ſhould be men any where, who never deſcended from him. To ſay no more, this is the great difficulty to which all others may be reduced: To clear it by a larger explanation, I muſt make uſe of terms which deſerve greater reſpect, than to be put into a treatiſe ſo far from being ſerious as this is. But perhaps there is no need of anſwering the objection, for it concerns no body but the man in the moon; and I never yet affirmed there are men there; if any aſk what the inhabitants are, if they be not men? All I can ſay is, that I never ſaw them; and it is not becauſe I have ſeen them that I ſpeak of them: Let none however think, that I ſay there are no men in the moon, purpoſely to avoid the objection made againſt me; for it appears, it is impoſſible there ſhould be any men there, according to the idea I have framed of that infinite diverſity and variety, which is to be obſerved in the works of Nature; this idea runs through the whole book, and cannot be contradicted by any philoſopher: Nay, I believe I ſhall only hear this objection ſtarted by ſuch as ſhall ſpeak of theſe diſcourſes, without having read them. But is this a point to be depended on? No, on the contrary, I ſhould more probably fear, that the objection might be made to me from many paſſages.

The reader will find in this edition, beſides many improvements interſperſed in the body of the work, one new converſation, in which I have put together thoſe reaſonings, which I had omitted in the foregoing ones; and have ſubjoined ſome late diſcoveries in the firmament, ſeveral of which have never yet been made public.

FONTENELLE.

To Monſieur L***.

TO give you, Sir, a particular detail how I paſſed my time in the country, with the Marchioneſs of G***, would make a large volume; and what is yet worſe, a volume of philoſophy: Whereas the entertainments you expect are of another kind, as balls, parties at play, or hunting, inſtead of which you muſt take up with vortexes, planets, and new worlds; theſe were the ſubject of our converſation. Now, as you have the happineſs to be a philoſopher, one entertainment is the ſame to you as another. And I fancy, you will be pleaſed, that I have brought over the Marchioneſs to our party; we could not have gained a more conſiderable perſon, for youth and beauty are ever ineſtimable: If Wiſdom would appear with ſucceſs to mankind, think you ſhe could do it more effectually than in the perſon of this lady? And yet was her company but half ſo agreeable, I am perſuaded all the world would run mad after wiſdom. But though I tell you all the diſcourſe I had with the lady, you muſt not expect miracles from me. It is impoſſible, without her wit, to expreſs her ſentiments, in the ſame manner ſhe delivered them. For my part, I think her very learned, from the great diſpoſition ſhe has to learning. It is not poring upon books that makes a man a ſcholar. I know many who have done nothing elſe, and yet I fancy are not one tittle the wiſer: But perhaps you expect, before I enter upon my ſubject, I ſhould deſcribe the ſituations and buildings of the Marchioneſs's ſeat; many great palaces have been turned inſide outward upon far leſs occaſion: But I intend to ſave you and myſelf that labour; let it ſuffice, that I tell you, I found no company with the lady; this I was not at all diſpleaſed at; the firſt two days drained me of all the news I brought from Paris; what I now ſend you is aſtronomical converſation, which I will divide into ſo many parts as we were evenings together.

THE

THE

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A CONVERSATION ON THE Plurality of Worlds.

The FIRST EVENING.

That the earth is a planet, which turns on itſelf, and round the ſun.

ONE evening after ſupper we went to take a turn in the park; the air, from the heat of the preceding day, was extremely refreſhing; the moon about an hour high, and her luſtre, between the trees, made a moſt agreeable mixture of light and ſhade; the ſtars were array'd in all their glory, and not a cloud appeared throughout the hemiſphere. I was muſing on this awful proſpect, but who can long contemplate on the moon and ſtars in the company of a pretty woman? I am much miſtaken if that is a time for contemplation: Well, Madam, ſays I to the Marchioneſs, is not the night as pleaſant as the day? The day, replied ſhe, like a fair beauty, is clear and dazzling; but the night, like a brown one, more ſoft and moving. You are generous, Madam, anſwered I, to prefer the brown, who have all the charms that belong to the fair: But, is there any thing more beautiful in nature than the day? The heroines of romances are generally fair; and that beauty muſt be perfect, which has all the advantages of imagination. Tell me not, ſays ſhe, of perfect beauty; nothing can be ſo that is not moving. But ſince you talk of romances, why do lovers, in their ſongs and elegies, addreſs themſelves to the night? It is the night, Madam, replied I, that crowns their joys, and therefore deſerves their thanks. But it is the night, anſwered ſhe, that hears their complaints, and how comes it to paſs, the day is ſo little truſted with their ſecrets? I confeſs, Madam, ſays I, the night has ſomewhat a more melancholy air than the day, we fancy the ſtars march more ſilently than the ſun; and our thoughts wander with the more liberty, whilſt we think all the world at reſt but ourſelves: Beſides, the day is more uniform; we ſee nothing but the ſun, and one light in the firmament; whilſt the night ſhews us variety of objects, and gives us ten thouſand ſtars, which inſpire us with as many pleaſant ideas. She replied, what you ſay is true, I love the ſtars; there is ſomewhat charming in them, I could almoſt be angry with the ſun.

ſun for effacing them. And I cannot, ſays I, pardon him for keeping all thoſe worlds from my ſight: What worlds, ſays ſhe, looking earneſtly upon me, do you mean?

I BEG your pardon, Madam, replied I, you have put me upon my folly, and I begin to rave: What folly? anſwered ſhe. I muſt own it,I have had a ſtrong fancy that every ſtar is a world: I will not ſwear that is true, but muſt think ſo, becauſe it is ſo pleaſant to believe it; it is a fancy come into my head, which is very diverting. If your folly be ſo diverting, ſays the Marchioneſs, pray make me ſenſible of it; provided the pleaſure be ſo great, I will believe as much of the ſtars as you would have me. I fear, Madam, replied I, it is a diverſion you will not reliſh; it is not like reading one of Moliere's plays; it is a pleaſure rather of the fancy than of the judgment. I hope, anſwered ſhe, you do not think me incapable of it; teach me your ſtars, I will ſhew you the contrary. No, no, ſays I, it ſhall never be ſaid I was talking philoſophy at ten o'clock at night, to the moſt amiable creature in the univerſe; find your philoſophers ſomewhere elſe.

BUT vain were my excuſes; who could reſiſt ſuch charms? I was forced to yield, and yet I knew not where to begin; for to perſons who underſtand not any thing of natural philoſophy, you moſt go a great way about to prove that the earth may be a planet; the planets ſo many earths; and all the ſtars diſtinct worlds; however, to give her a general notion of philoſophy, at laſt I reſolved on this method: Madam, ſays I, all philoſophy is founded upon theſe two propoſitions, 1. That we are too ſhort-ſighted; or, 2. That we are too curious; for if our eyes were better than they are, we ſhould ſoon ſee whether the ſtars were worlds or not; and if, on the other hand, we were leſs curious, we ſhould not care whether the ſtars are worlds or not, which I think is much to the ſame purpoſe. But the buſineſs is, we have a mind to know more than we ſee: And again, if we could diſcern well what we do ſee, it would be too much known to us; but we ſee things quite otherwiſe than they are. So that your true philoſopher will not believe what he does ſee, and is always conjecturing at what he doth not; which, I think, is a life not much to be envied: Upon this I fancy to myſelf, that Nature very much reſembles an opera; where you ſtand, you do no ſee the ſtage as it really is, but as it is placed with advantage, and all the wheels and movements hid, to make the repreſentation the more agreeable: Nor do you trouble yourſelf how, or by what means the machines are moved, though certainly an engineer in the pit is affected with what does not touch you; he is pleaſed with the motion, and is demonſtrating to himſelf on what it depends, and how it comes to paſs. This engineer is like a philoſopher, though the difficulty be greater on the philoſopher's part, the machines of the theatre being not near ſo curious as thoſe of Nature, who diſpoſes her wheels and ſprings ſo much out of ſight, that we have been a long while gueſſing at the movement of the univerſe. Let us imagine ſome of the ancient ſages to be at an opera, ſuch as Pythagoras, Plato, or Ariſtotle, and all the wiſe men who have made ſuch a noiſe in the world, for theſe many ages: We will ſuppoſe them at the repreſentation of Phæton, where they ſee the aſpiring youth lifted up by the winds, but do not diſcover the wires by which he mounts, nor know they any thing of what is done behind the ſcenes. Would you have all the philoſophers own themſelves to be ſtark fools, and confeſs ingeniouſly they do not know how it comes to paſs: No, no, they are not called wiſe men for nothing; though, let me tell you, moſt of their wiſdom depends upon the ignorance of their neighbours. Every man preſently gives his opinion, and how improbable ſoever, there are fools enough of all ſorts to believe them: One tells you Phæton is drawn up by a hidden magnetic virtue, no matter where it lies; and perhaps the grave gentleman will take the pet, if you aſk him the queſtion: Another ſays, Phæton is compoſed of certain numbers that make him mount; and after all, the philoſopher knows no more of thoſe numbers than a ſucking child does of algebra: A third tells you, Phæton has a ſecret love for the top of the theatre, and, like a true lover, cannot be at reſt out of his miſtreſs's company; with an hundred ſuch extravagant fancies, that a man muſt conclude the old ſages were very good banterers: But now comes Monſieur Deſcartes, with ſome of the moderns, and they tell you Phæton aſcends, becauſe a greater weight than he deſcends; ſo that now we do not believe a body can move without it is puſhed and forced by another body, and, as it were, drawn by cords, ſo that nothing can riſe or fall, but by the means of a counterpoiſe; to ſee Nature then, as ſhe really is, one muſt ſtand behind the ſcenes at the opera. I perceive, ſays the lady, philoſophy is now become very mechanical. Yes, Madam, replied I, ſo mechanical, that I fear we ſhall quickly be aſhamed of it; they will have the world to be in large, what a watch is in ſmall, that is very regular, and depends only upon the juſt diſpoſition of the ſeveral parts of the movement. But pray tell me, Madam, had you not formerly a more ſublime idea of the univerſe? Do not you think then that you honoured it more than it deſerved? For moſt people have the leſs eſteem for it, ſince they have pretended to know it. I am not of their opinion, ſays ſhe: I value it the more ſince I know it reſembles a watch; and the more plain and eaſy the whole order of Nature ſeems, to me it appears to be the more admirable.

I do not know, anſwered I, who has inſpired you with theſe ſolid notions, but I am certain there are few who have them beſides yourſelf: People generally admire what they do not comprehend; they have a veneration for obſcurity, and look upon Nature as a kind of magic, while they do not underſtand her; and deſpiſe her below legerdemain, when once they are acquainted with her; but I find you, Madam, ſo much better diſpoſed, that I have nothing to do but to draw the curtain, and ſhew you the world. That noble expanſe which appears fartheſt from the earth (where we reſide) is called the heavens,

vens, that azure firmament, where the ſtars are faſtened like ſo many nails, (and are called fixed) becauſe they ſeem to have no other motion than that of their horizon, which carries them with itſelf from eaſt to weſt. Between the earth and this great vault, as I may call it) hang, at different heights, the ſun, and the moon, with the other five ſtars, Mercury, Venus, Mars, Jupiter, and Saturn, which we call the planets. Theſe planets not being faſtened to the ſame heaven, and having very unequal motions, have divers aſpects and poſitions: Whereas the fixed ſtars, in reſpect to one another, are always in the ſame ſituation: For example, the chariot which you ſee is compoſed of theſe ſeven ſtars, has been, and ever will be as it now is, though the moon is ſometimes nearer to the ſun, and ſometimes farther from it, and ſo it is with the reſt of the planets. Thus things appeared to the old Chaldean ſhepherds, whoſe great leiſure produced theſe firſt obſervations, which have ſince been the foundation of aſtronomy; which ſcience had its birth in Chaldea, as geometry ſprung from Egypt, where the inundation of the Nile confounding the bounds of the fields, occaſioned their inventing more exact meaſures to diſtinguiſh every one's land from that of his neighbour. So that Aſtronomy was the daughter of Idleneſs, Geometry the daughter of Intereſt; and if we did but examine Poetry, we ſhould certainly find her the daughter of Love.

I AM glad, ſays the lady, I have learned the genealogy of the ſciences, and am convinced I muſt ſtick to aſtronomy, my ſoul is not mercenary enough for geometry, nor is it tender enough for poetry; but I have as much time to ſpare as aſtronomy requires; beſides, we are now in the country, and lead a kind of paſtoral life, all which ſuits beſt with aſtronomy. Do not deceive yourſelf, Madam, replied I, it is not a true ſhepherds life to talk of the ſtars and planets: See if they paſs their time ſo in Aſtrea. That ſort of ſhepherd's craft, anſwered ſhe, is too dangerous for me to learn: I love the honeſt Chaldeans, and you muſt teach me their rules, if you would have me improve in their ſcience; But let us proceed; When they had placed the heavens in the diſpoſition you tell me, pray, what is the next queſtion? The next, ſays I, is the diſpoſing the ſeveral parts of the univerſe, which the learned call, making a ſyſtem; but before I expound the firſt ſyſtem, I would have you obſerve, we are all naturally like the Athenian idiot, who fancied all the ſhips that came into the Pyreum port, belonged to him: Nor is our folly leſs extravagant, we believe all things in nature deſigned for our uſe; and do but aſk a philoſopher, to what purpoſe there is that prodigious number of fixed ſtars, when a far leſs number would perform the ſervice they do us? He anſwers coldly, they were made to pleaſe our ſight. Upon this principle they imagined the earth reſted in the centre of the univerſe, while all the celeſtial bodies (which were made for it) took the pains to turn round to give light to it. They placed the moon above the earth, Mercury above the moon after Venus, the ſun, Mars, Jupiter, Saturn; above all theſe they ſet the heaven of fixed ſtars: The earth was juſt in the middle of thoſe circles which contain the planets, and the greater the circles were, they were the farther diſtant from the earth, and by conſequence the fartheſt planets took up the moſt time in finiſhing their courſe; which in effect is true: But why, ſays the Marchioneſs (interrupting me) do you diſlike this ſyſtem? It ſeems to me very clear and intelligible. However, replied I, Madam, I will make it plainer; for ſhould I give it you as it came from Ptolemy its author, or ſome others who have ſince ſtudied it, I ſhould frighten you, I fancy, inſtead of diverting you. Since the motions of the planets are not ſo regular, but that ſometimes they go faſter, ſometimes ſlower, ſometimes are nearer the earth, and ſometimes are farther from it; the ancients invented I do not know how many orbs or circles, involved one within another, which they thought would ſolve all objections. This confuſion of circles was ſo great, that at that time, when they knew no better, a certain king of Caſtile, a great mathematician, (but not much troubled with religion) ſaid, That, had God conſulted him when he made the world, he would have told him how to have framed it better. The ſaying was very atheiſtical, and no doubt the inſtructions he would have given the Almighty, were the ſuppreſſing thoſe circles with which he had clogged the celeſtial motions, and the taking away two or three ſuperfluous heavens, which were placed above the fixed ſtars; for the philoſophers to explain the motion of the celeſtial bodies, had above the uppermoſt heaven (which we ſee) found another of cryſtal, to influence and give motion to the inferior heavens; and where-ever they heard of another motion, they preſently clapped up a cryſtal heaven, which coſt them nothing. But why, ſays the lady, muſt their heaven be of cryſtal, would nothing elſe ſerve as well? No, no, replied I, nothing ſo well; for the light is to come through them, and yet they are to be ſolid. Ariſtotle would have it ſo, he had found ſolidity to be one of their excellencies, and when he had once ſaid it, no body would be ſo rude as to queſtion him But it ſeems there were comets much higher than the philoſophers expected, which as they paſſed along, broke the cryſtal heavens, and confounded the univerſe. But, to make the beſt of a bad market, they preſently melted down their broken glaſs, and to Ariſtotle's confuſion, made the heavens fluid; and by the obſervations of theſe latter ages, it is now out of doubt, that Venus and Mercury turn round the ſun, not round the earth, according to the ancient ſyſtem, which is every where exploded, and all the authorities not worth a ruſh. But that which I am going to lay down, will ſolve all, and is ſo clear, that the king of Caſtile himſelf may ſpare his advice. Methinks, anſwered the Marchioneſs, your philoſophy is a kind of out-cry, where he that offers to do the work cheapeſt, carries it from all the reſt. This, ſays I, is very true, Nature is a great houſewife, ſhe always makes uſe of what coſts leaſt, let the difference be ever ſo inconſiderable; and yet this frugality is accompanied with an extraordinary magnificence, which ſhines through all her works; that is, ſhe is magnificent in the deſign, but frugal in the execution, and what can be more praiſe worthy, than a great deſign accompanied with a little expence? But in our ideas we turn things topſy-turvy, we place our thrift in the deſign, and are at ten times more charge in workmanſhip than it requires; which is very ridiculous. Imitate Nature then, replied ſhe, in your ſyſtem, and give me as little trouble as you can to comprehend you. Madam, ſays I, fear it not, we have done with our impertinences: Imagine then a German called Copernicus confounding every thing, tearing in pieces the beloved circles of antiquity, and ſhattering their cryſtal heavens like ſo many glaſs windows; ſeized with the noble rage of aſtronomy, he ſnatches up the earth from the centre of the univerſe, ſends her packing, and places the ſun in the centre, to which it did more juſtly belong; the planets no longer turn round the earth, nor incloſe it in the circles they deſcribe; if they give us light, it is but by chance, and as they meet us in their way: All now turns round the ſun, even the earth herſelf: and Copernicus, to puniſh the earth for her former lazineſs, makes her contribute all he can to the motion of the planets and heavens; and now ſtripped of all the heavenly equipage with which ſhe was ſo gloriouſly attended, ſhe has nothing left her but the moon, which ſtill turns round about her: Fair and ſoftly, ſays the Marchioneſs, I fancy you yourſelf are ſeized with the noble fury of aſtronomy; a little leſs rapture, and I ſhall underſtand you the better. The ſun, you affirm, is in the centre of the univerſe, and is immoveable; what follows next? It is Mercury, ſays I; he turns round the ſun, ſo that the ſun is in the centre of the circle wherein Mercury moves: above Mercury is Venus, who turns alſo round the ſun; after, comes the earth, which being placed higher than Mercury and Venus, makes a greater circle round the ſun than either of them; at laſt comes Mars, Jupiter, and Saturn, in the ſame order I name them; ſo that Saturn has the greateſt circle round the ſun, which is the reaſon he is longer in making his revolution than any of the other planets. You have forgot the moon, ſays the Marchioneſs. We ſhall quickly find her again, replied I; the moon turns round the earth, and does not leave her, but as the earth advances in the circle, which ſhe deſcribes about the ſun: and if the moon turns round the ſun, it is becauſe ſhe will not quit the earth. I underſtand you, anſwered ſhe, and I love the moon for ſtaying with us when all the other planets abandon us; nay, I fear your German would have willingly taken her away too if he could; for in all his proceedings, I find he had a great ſpite to the earth. It was well done of him, ſays I, to abate the vanity of mankind, who had taken up the beſt place in the univerſe; and it pleaſes me to ſee the earth in the crowds of the planets. Sure, anſwered ſhe, you do no think their vanity extends itſelf ſo far as aſtronomy! Do you believe you have humbled me, in telling me the earth goes round the ſun! For my part, I do not think myſelf the worſe for it. I confeſs, Madam, replied I, it is my belief, that a fair lady would be much more concerned for her place at a ball, than for her rank in the univerſe; and the precedents of two planets will not make half ſuch a noiſe in the world, as that of two ambaſſadors; however, the ſame inclination which reigns at a ceremony,

mony, governs in a ſyſtem; and if you love the uppermoſt place in the one, the philoſopher deſires the centre in the other; he flatters himſelf that all things were made for him, and inſenſibly believes a matter of pure ſpeculation to be a point of intereſt. This is a calumny, ſays ſhe, you have invented againſt mankind; why did they receive this ſyſtem, if it was ſo erroneous: I know not, anſwered I, but I am ſure Copernicus himſelf diſtruſted the ſucceſs of his opinion; it was a long time before he would venture to publiſh it; nor had he done it then, without the importunity of his friends. But do you know what became of him? The very day they brought him the firſt printed ſheet of his book, he died; foreſeeing, that he ſhould never be able to reconcile all the contradictions, and therefore very wiſely ſlipt out of the way. I would be juſt to all the world, ſays the lady, but it is hard to fancy we move, and yet find we do not change our place; we perceive our ſelves in the morning where we lay down at night: Perhaps you will tell me the whole earth moves. Yes, certainly, adds I; it is the ſame caſe as if you fell aſleep in a boat upon the river, when you wake you find yourſelf in the ſame place, and the ſame ſituation, in reſpect to all the parts of the boat. It is true, replied ſhe, but there is a great difference, when I wake I find another ſhore, and that ſhows me, my boat has changed its place. But it is not the ſame with the earth, I find all things as I left them. No, no, ſays I, there is another ſhore too; you know that beyond the circles of the planets are fixed ſtars, there is our ſhore, I am upon the earth, and the earth makes a great circle round the ſun, I look for the centre of the circle and ſee the ſun there, then I direct my ſight beyond the ſun in a right line, and ſhould certainly diſcover the fixed ſtars which anſwer to the ſun, but that the light of the ſun effaces them; but at night I eaſily perceive the ſtars that correſponded with him in the day, which is exactly the ſame thing: if the earth did not change its place in the circle where it is, I ſhould ſee the ſun always againſt the ſame fixed ſtars; but when the earth changes its place, the ſun muſt anſwer to other ſtars, and there again is your ſhore, which is always changing. And ſeeing the earth makes her circle in a year, I ſee the ſun likewiſe in the ſpace of a year anſwer ſucceſſively to the whole circle of the fixed ſtars, which circle is called the zodiac; I will draw you the figure of it, if you pleaſe, on the ſand? It is no matter, replied the lady, I can do well enough without it: beſides, it will give an air of learning to my park, which I would not have in it: For I have heard of a certain philoſopher, who being ſhipwrecked upon an unknown iſland, ſeeing ſeveral mathematical figures traced on the ſea ſhore, cried out to thoſe who followed him, Courage my companians, the iſle is inhabited, behold the footſteps of men. But you may ſpare your figures, ſuch footſteps are not decent here.

I CONFESS, Madam, added I, the footſteps of lovers would better become this place; that is, your name and cypher carved on the trees by your adorers. Tell me not, ſays ſhe, of lovers and adorers, I am for my beloved ſun and planets. But how comes it to paſs that the ſun, as to the fixed ſtars, compleats his courſe but in a year, and yet goes over our heads every day? Did you never, replied I, obſerve a bowl on the green? It runs towards the jack, and at the ſame time turns very often round itſelf, ſo that the parts which were above are below, and thoſe which were below are above; juſt ſo it is with the earth: at the ſame time that ſhe advances on the circle, which in a year's ſpace ſhe makes round the ſun, in 24 hours ſhe turns round herſelf; ſo that in 24 hours every part of the earth loſes the ſun, and recovers him again, and as it turns towards the ſun, it ſeems to riſe; and as it turns from him, it ſeems to fall. It is very pleaſant, ſays ſhe, that the earth muſt take all upon herſelf, and the ſun do nothing: and when the moon, the other planets, and the fixed ſtars ſeem to go over our heads every 24 hours, you will ſay, that too is only fancy! Mere fancy, Madam, which proceeds from the ſame cauſe, for the planets compleat their courſes round the ſun at unequal times, according to their unequal diſtances; and that which to-day we ſee anſwer to a certain point in the zodiac, or circle of the fixed ſtars, to-morrow will anſwer to another point, becauſe it is advanced on its own circle, as well as we are advanced upon ours: We move, and the planets move too, but with more or leſs rapidity than we do; this puts us in different points of ſight in reſpect to them, and makes us think their courſes irregular; but there is no occaſion of diſcourſing to you on that head; it is ſufficient to inform you that what ſeems irregular in the planets, proceeds only from our motion, when in truth they are all very regular. I will ſupoſe them ſo, ſays the lady, but I would not have their regularity put the earth to ſo great a trouble; methinks you exact too much activity from ſo ponderous a maſs. But, ſays I, had you rather that the ſun and all the ſtars, which are vaſt great bodies, ſhould in 24 hours make a prodigious tour round the earth; and that the fixed ſtars, which are in a circle of infinite extent, whoſe movement is always extreme, ſhould run in a day, 300,000,000 of leagues, and go farther than from hence to China in the time that you could ſay, Away, quick to China, as they needs muſt, if the earth did not turn round itſelf every 24 hours: To ſay the truth, it is much more reaſonable to think that ſhe ſhould make the tour which at moſt is not above 9000 leagues; you perceive plainly, that to ſet 9000 leagues againſt 300,000,000 is no trifling difference. Oh, ſays ſhe, the ſun and ſtars are all fire, their motion is not very ſlow: but the earth I fancy, is a little unwieldy. That, replied I, ſignifies nothing; for what think you of a firſt-rate ſhip, which carries 110 guns, and above 1000 men, beſides great quantities of merchandiſe? One puff of wind, you ſee, ſets her a ſailing, becauſe the water is liquid, and being eaſily ſeparated, very little reſiſts the motion of the ſhip; or if ſhe lie in the middle of a river, ſhe will without difficulty drive with the ſtream, becauſe there is nothing to oppoſe her courſe; ſo the earth, tho' never ſo weighty, is as eaſily borne up by the celeſtial matter, which is a thouſand times more fluid than the water, and fills all that great ſpace where the planets float; for how elſe would you have the earth faſtened to reſiſt the motion of the celeſtial matter, and not be driven by it? You may as well fancy a little block of wood can withſtand the current of a river. But pray, ſays ſhe, how can the earth, with all its weight, be borne up by your celeſtial matter, which muſt be very light, becauſe it is ſo fluid? It does not argue, anſwered I, that what is moſt fluid, is moſt light: For what think you of the great ſhip I mentioned juſt now, which with all its burden is yet lighter than the water it floats on; I will have nothing to do with the great ſhip, ſays ſhe, with ſome warmth, and I begin to apprehend myſelf in ſome danger upon ſuch a whirligig as you have made the earth. There is no danger, replied I, but, Madam, if your fears increaſe we will have the earth ſupported by four elephants, as the Indians believe it. Hey day, cried ſhe, here is another ſyſtem; however, I love thoſe people for taking care of themſelves, they have a good foundation to truſt to, while we Copernicans are a little too venturous with the celeſtial matter; and yet I fancy, if the Indians thought the earth in the leaſt danger of ſinking, they would double their number of elephants.

THEY do well, ſays I, laughing at her fancy; who would ſleep in fear? and if you have occaſion for them to-night, we will put as many as you pleaſe in our ſyſtem, we can take them away again by degrees, as you grow better confirmed. I do not think them very neceſſary, replied ſhe, I have courage enough to turn. You ſhall turn with pleaſure, Madam, ſays

I, and ſhall find delightful ideas in this ſyſtem. For example, ſometimes I fancy myſelf ſuſpended in the air, without any motion, while the earth turns round me in 24 hours; I ſee I know not how many different faces paſs under me, ſome white, ſome black, and ſome tawny; ſometimes I ſee hats, and ſometimes turbans; now heads with hair, and then bald pates; here I ſee cities with ſteeples, ſome with ſpires and creſcents, others with towers of porcelain; and anon, great countries with nothing but huts; here I ſee vaſt oceans, and there nothing but deſarts; in ſhort, I diſcover the infinite variety which is upon the ſurface of the earth.

I CONFESS, ſays ſhe, 24 hours would thus be very well beſtowed, ſo we were in the place where we are now, I do not mean in the park, but we will ſuppoſe ourſelves in the air, other people continually paſſing by, who take up our place, and at the end of 24 hours we return to it again.

COPERNICUS himſelf, anſwered I, could not have comprehended it better: Firſt then, we might ſee the Engliſh paſſing by us, up to the ears in politicks, yet ſettling the nation no better than we do the world in the moon; then follows a great ſea, and there perhaps ſome veſſel, not near in that tranquillity as we are; then come ſome of the Iroquois going to eat a priſoner for their breakfaſt, who ſeems as little concerned as his devourers. After appear the women of the land of Jeſſo, who ſpend all their time in dreſſing proviſions for their huſbands, and painting their lips and eye-brows blue, only to pleaſe the greateſt brutes in the world. Then the Tartars going devoutly on pilgrimage to their great Preſter John, who never comes out of a gloomy apartment all hung with lamps, by the light of which they pay their adoration to him: Then the fair Circaſſians, who make no ſcruple of granting every thing to the firſt comer, except what they think eſſentially belongs to their huſbands: Then the inhabitants of little Tartary, going to ſteal concubines for the Turks and Perſians: and at laſt, our own dear countrymen, it may be, in ſome points, as ridiculous as the beſt of them.

This, ſays the Marchioneſs, is very pleaſant; but, to imagine what you tell me, though I were above, and ſaw all this, I would have the liberty to haſten or retard the motion of the earth, according as the objects pleaſed me more or leſs; and I aſſure you I ſhould quickly ſend packing the politicians and man eaters, but ſhould have a great curioſity for the fair Circaſſians; for methinks they have a cuſtom very particular. But I have a difficulty to ſolve, and you muſt be ſerious. As the earth moves, the air changes every moment, ſo we breathe the air of another country. Not at all, replied I, for the air which encompaſſes the earth, does not extend above a certain height, perhaps twenty leagues; it follows us, and turns with us: have you not ſeen the labours of the ſilk-worm, the ſhells which thoſe little inſects impriſon themſelves in, and weave with ſo much art and cloſeneſs; but yet their covering is of a down very looſe and ſoft: So the earth which is ſolid is covered from the ſurface 20 leagues upwards with a kind of down, which is the air, and like the ſhell of the ſilk worm turns at the ſame time. Beyond the air is the celeſtial matter, incomparably more pure and ſubtle, and much more agitated than the air.

YOUR compariſon, ſays ſhe, is ſomewhat low, and yet what wonders are wrought, what wars, what changes in this little ſhell? It is true, replied I, but Nature takes no notice of ſuch minute particular motions, but drives us along with the general motion, as if ſhe were at bowls.

METHINKS, ſays ſhe, it is very ridiculous to be upon a thing that turns, and be in all this perplexity, and yet not be well aſſured that it does turn: and to tell you the truth, I begin to diſtruſt the reaſons you give, why we ſhould not be ſenſible of the motion of the earth; for is it poſſible there ſhould not be ſome little mark left, by which we might perceive it?

ALL motions, replied I, the more common and natural they are the leſs perceptible, and this holds true even in morality; the motion of ſelf-love is ſo natural to us, that for the moſt part we are not ſenſible of it, and we believe we act by other principles. Ah! ſays the Marchioneſs, now you are moralizing, to a queſtion of natural philoſophy which is running wide of the argument: But enough, this lecture is ſufficient for the firſt time; let us now depart and meet here again to-morrow, you with your ſyſtems, and I with my ignorance.

In returning back to the caſtle, that I might ſay all I could on the ſubject, I told her of a third ſyſtem, invented by Tycho Brache, who had fixed the earth in the centre of the world, turned the ſun round the earth, and the reſt of the planets round the ſun; for ſince the new diſcoveries, there was no way left to have the planets turn round the earth. But the lady, with the quickeſt apprehenſion, replied, ſhe thought that too affected a ſyſtem, that among ſo many great bodies, the earth only ſhould be exempted from turning round the ſun, that it was improper to make the ſun turn round the earth, when all the planets turned round the ſun; and that though this ſyſtem was to prove the immobility of the earth, yet ſhe thought it very improbable: So we reſolved to ſtick to Copernicus, whoſe opinion we thought moſt uniform, probable, and diverting. In a word, the ſimplicity of his ſyſtem convinced us, and the boldneſs of it ſurprizes with pleaſure.

The Second Evening.

That the Moon is an habitable World.

THE next morning, as ſoon as any one could get admittance, I ſent to the Marchioneſs's apartment, to know how ſhe had reſted, and whether the motion of the earth had not diſturbed her? She returned for anſwer, that ſhe began to be accuſtomed to it, and that Copernicus himſelf had not ſlept better. Soon after, there came ſome neighbours to dinner, who ſtaid with her till the evening, according to a tireſome rural cuſtom; nay, and they were very obliging in going then, for the country likewiſe gives a privilege of extending their viſits to the next morning if they be ſo diſpoſed, and have not the conſcience to break up. The lady and myſelf, finding ourſelves at liberty, in the evening, went again to the park, and immediately fell upon our ſyſtems: She ſo well retained what I told her the night before, that ſhe deſired I would proceed without any repetition. Well, Madam, ſays I, ſince the ſun, which is now immoveable, has left off being a planet, and the earth which turns round him is now become one, you will not be ſurprized when you hear that the moon is an earth too, and a habitable world. I confeſs, ſays ſhe, I have often heard talk of the world in the moon, but I always looked upon it as viſionary, and mere fancy. And, replied I, it may be ſo ſtill; I am in this caſe, as people in a civil war, where the uncertainty of what may happen, makes them hold intelligence with the oppoſite party, and correſpond with their very enemies; for though I do verily believe the moon is inhabited, I live civily with thoſe who do not believe it; and I am (like ſome honeſt gentlemen in point of religion) ſtill ready to embrace the prevailing opinion; but till the unbelievers have a more conſiderable advantage, I declare for the inhabitants of the moon.

Suppose there had never been any communication between Paris and St. Dennis, and one, who was never beyond the walls of this city, ſaw St. Dennis from the towers of Notre-Dame; you aſk him if he believes St. Dennis is inhabited as Paris is? He preſently anſwers boldly, No; for, ſays he, I ſee very well the people at Paris, but thoſe at St. Dennis I do not ſee at all, nor did I ever hear of any there: It is true, you tell him, that from the towers of Notre-Dame, he cannot perceive any inhabitants of St. Dennis, becauſe of the diſtance; but all that he does diſcover of St. Dennis, very much reſembles what he ſees at Paris, the ſteeples, houſes, and walls, ſo that it may very well be inhabited as Paris is. All this ſignifies nothing, my cockneigh ſtill maintains that St. Dennis is not inhabited, becauſe he ſees nobody there. The moon is our St. Dennis, and every one of us, like this Pariſian cockneigh, who never went out of his own city.

You are too ſevere, ſays ſhe, upon your fellow citizens; we are not all ſure ſo ſilly as the cockneigh; ſince St. Dennis is juſt like Paris, he is a fool if he does not think it inhabited: But the moon is not at all like the earth. Take care what you ſay, Madam, replied I, for if the moon reſembles the earth, you are under neceſſity to be believe it inhabited. If it be ſo, ſays ſhe, I own I cannot be diſpenſed from believing it; and you ſeem ſo confident of it, that I fear I muſt, whether I will or no. It is true, the two motions of the earth, (which I could never imagine till now) do a little ſtagger me as to all the reſt: but yet, how is it poſſible the earth ſhould enlighten as the moon does, without which they cannot be alike? If that be all, added I, the difference is not great; for it is the ſun which is the ſole fountain of light; that quality proceeds only from him; and if the planets give light to us, it is becauſe they firſt receive it from the ſun; the ſun ſends light to the moon, and ſhe reflects it back on the earth; the earth in the ſame manner receives light from the ſun, and ſends it to the moon; for the diſtance is the ſame between the earth and the moon, as between the moon and the earth.

But, ſays the Marchioneſs, is the earth as fit to ſend back the light of the ſun as the moon is? You are altogether for the moon, ſaid I; ſhe is much obliged to you; but you muſt know that light is made up of certain little balls, which rebound from what is ſolid, but paſs through what admits of an entrance in a right line, as air or glaſs: So that what makes the moon enlighten us, is that ſhe is a firm and ſolid body, from which the little balls rebound; and we muſt deny our ſenſes, if we will not allow the earth the ſame ſolidity: In ſhort, the difference is how we are ſeated; for the moon being at ſo vaſt a diſtance from us, we can only diſcover her to be a body of light, and do not perceive that ſhe is a great maſs, altogether like the earth: Whereas, on the contrary, becauſe we are ſo near the earth, we know her to be a great maſs, proper for the furniſhing proviſions for animals; but do not diſcover her to be a body of light, for want of the due diſtance: It is juſt ſo with us all, ſays the lady, we are dazzled with the quality and fortune of thoſe who are above us, when, did we but examine things nicely, we ſhould find ourſelves upon a level.

It is the very ſame thing, ſays I: We would judge of all things, but yet ſtand in the wrong place; we are too near to judge of ourſelves, and to far off to know others: So that the true way to ſee things as they are, is to ſtand between the moon and the earth; to be purely a ſpectator of this world, and not an inhabitant. I ſhall never be ſatisfied, ſays ſhe, for the injuſtice we do to the earth, and the too favourable opinion we have of the moon, till you aſſure me that the inhabitants of the moon are as little acquainted with their own advantages as we are with ours; and that they take our earth for a planet, a planet, without knowing theirs is one too. Do not doubt it, anſwered I, we appear to them to perform very regularly our function of a planet: It is true they do not ſee us make a circle round them, but that is no great matter. That half of the moon which was turned towards us at the beginning of the world, has been turned towards us ever ſince: and thoſe ſpots in her, which we have fancied look like a face, with eyes, noſe, mouth, are ſtill the ſame, and if the other oppoſite half ſhould appear to us, we ſhould, no doubt, fancy another figure, from the different ſpots that are in it: Not but that the moon turns upon herſelf, and in the ſame time that ſhe turns round the earth, that is in a month; but while ſhe is making that turn upon herſelf, and that ſhe ſhould hide a cheek, for example, and appear ſomewhat elſe to us, ſhe makes a like part of her circle round the earth, and ſtill preſents to us the ſame cheek: ſo that the moon, who in reſpect of the ſun and ſtars, turns round herſelf, in reſpect of us does not turn at all; they ſeem to her to riſe and ſet in the ſpace of fifteen days; but for our earth, it appears to her to be held up in the ſame place of the heavens. It is true, this apparent immobility is not very agreeable to a body which ſhould paſs for a planet, but it is not altogether perfect; the moon has a kind of trembling, which cauſes a little corner of her face to be ſometimes hid from us, and a little corner of the oppoſite half appears; but then, upon my word, ſhe attributes that trembling to us, and fancies that we have in the heavens the motions of a pendulum, which vibrates to and fro.

I FIND, ſays the Marchioneſs, the planets are juſt like us; we caſt that upon others which is in ourſelves. Says the earth, It is not I that turn, it is the ſun. Says the moon, It is not I that ſhake, it is the earth; the world is full of error: But I would not adviſe you, Madam, to undertake the reforming it; you had better convince yourſelf of the entire reſemblance of the earth and the moon: Imagine then theſe two great bowls ſuſpended in the heavens; you know that the ſun always enlightens the one half of a body that is round, and the other half is in the ſhadow; there is then one half of the earth, and one half of the moon, which is enlightened by the ſun; that is, one half, which is day, and the other half, which is night. Obſerve alſo, that as a ball has leſs force after it has been ſtruck againſt a wall, and rebounds to the other ſide, ſo is light weakened when it is reflected. The pale light, which comes to us from the moon, is the very light of the ſun, but it cannot come to us from the moon, but by reflexion: it has loſt much of the force and luſtre it had when it came directly from the ſun upon the moon; and that bright light, which ſhines directly upon us from the ſun, and which the earth reflects upon the moon, is as pale and weak when it arrives there; ſo that the light which appears to us in the moon, and enlightens our night, is the part of the moon which has day; and that part of the earth which has day when it is oppoſite to the part of the moon which has night, gives light to it: All depends upon this, how the moon and the earth behold one another. At the beginning of the month we do not ſee the moon, becauſe ſhe is between the ſun and us; that half of her which has day, is then turned towards the ſun; and that half which has night, is turned towards us; we cannot ſee it then, becauſe it has no light upon it; but that half of the moon which has night, being turned to that half of the earth which has day, ſees us without being perceived, and we then appear to them, juſt as the full moon does to us; ſo that, as I may ſay, the inhabitants of the moon have then a full earth; but the moon, being advanced upon her circle of a month, comes from under the ſun, and begins to turn towards us a little corner of that half which is light, which is the creſcent; then thoſe parts of the moon which have night do not ſee all that half of the earth which has day; we are then in the wain to them.

I UNDERSTAND you perfectly, ſays the Marchioneſs, without heſitation, I can comprehend the reſt at pleaſure, and I have nothing to do but think a moment, and bring the moon upon her circle of a month. I ſee, in general, that the inhabitants of the moon have a month quite contrary to us; when we have a full moon, their half of the moon which is light, is turned to our half of the earth which is dark; they do not ſee us at all, and they have then a new earth; this is plain. I would not ſtand the reproach of requiring a long explication of ſo eaſy a point: But now tell me, how come the eclipſes? You may eaſily gueſs that, Madam, when it is new moon, ſhe is between the ſun and us, and all her dark half is turned towards us who have light; that obſcure ſhadow is caſt upon us: If the moon be directly under the ſun, the ſhadow hides him from us, and at the ſame time obſcures a part of that half of the earth which is light; this is ſeen by that half of the moon which is dark: here then is an eclipſe of the ſun to us during our day, and an eclipſe of the earth to the moon during her night. When it is full moon, the earth is between her and the ſun, and all the dark half of the earth is turned towards all the light half of the moon; the ſhadow then of the earth caſts itſelf towards the moon, and if it falls on the moon, it obſcures that light-half which we ſee, which then has day, and hinders the ſun from ſhining on it: Here then is an eclipſe of the moon to us during our night, and an eclipſe of the ſun to the moon during her day; But the reaſon that we have not eclipſes every time that the moon is between the ſun and the earth, or the earth between the ſun and the moon, is becauſe theſe three bodies are not exactly placed in a right line, and by conſequence that which ſhould make the eclipſe caſts its ſhadow a little beſide that which ſhould be obſcured.

I AM greatly ſurprized, ſays the Marchioneſs, that there ſhould be ſo little myſtery in eclipſes, and that the whole world ſhould not know the cauſe of them. They never will, ſaid I, as ſome folks go about it. In the Eaſt Indies when the ſun and moon are in eclipſe, they believe a certain dæmon, who has black claws, is ſeizing on thoſe planets with his talons; and during that time, the rivers are covered with the heads of Indians, who are up to the neck in water, becauſe they eſteem it a very devout poſture, to implore the ſun and moon to defend them againſt the devil. In America they are perſuaded that the ſun and moon, when eclipſed, are angry: And what is it they will not do to be reconciled with them? The Greeks who were ſo refined a people, believed the moon was then inchanted, and that the magicians forced her to deſcend from heaven, and ſhed a malignant juice on the plants; nay, what a panick were we in, not many years ago, at an eclipſe of the ſun, when people hid themſelves in cellars, and all the philoſophers, who treated of its cauſe, could not perſuade them to come out till the eclipſe was over?

In good truth, ſays the lady, it is ſcandalous for men to be ſuch cowards, there ought to be a law made to prohibit the diſcourſing of eclipſes, that we might not call to mind the follies which have been occaſioned thereby. Your law then, ſays I, muſt aboliſh even the memory of every thing, and forbid us to ſpeak at all; for I know nothing in the world which is not a monument of the folly of man.

But what do you think, adds ſhe, of the inhabitants of the moon; are they as fearful of an eclipſe as we are? It would be a very good jeſt to ſee the Indians there up to the neck in water; that the Americans ſhould believe the earth angry with them, the Greeks fancy we were bewitched, and would deſtroy their plants; in ſhort, that we ſhould cauſe the ſame conſternation among them, as they do among us. Why not, Madam? I do not at all doubt of it; why ſhould the people in the moon have more wit than we? What right have they to fright us, and not we them? For my part, continued I laughing I believe, that ſince a prodigious company of men have been and ſtill are, ſuch fools to adore the moon, there certainly are people in the moon who worſhip the earth, and we are really upon our knees the one to the other. But ſure, ſays ſhe, we do not pretend to ſend any influences to the moon and to give a criſis to her ſick; if the people have any wit in thoſe parts, they will ſoon deſtroy the honour we flatter ourſelves with, and I fear, we ſhall have the diſadvantage.

MADAM, ſays I, pray fear not that, do you think we are the only fools in the univerſe? Is it not common for ignorance to ſpread itſelf every where? It is true, we can only gueſs at the folly of the people in the moon, but I no more doubt it, than I do the moſt authentic news that comes from thence. What authentic news comes from thence, ſays ſhe? That which the learned bring us, replied I, who travel thither every day with their tubes and teleſcopes; they will tell you of their diſcoveries there, of lands, ſeas, lakes, high mountains, and deep abyſſes.

INDEED, anſwered ſhe, I fancy they may diſcover mountains and abyſſes, becauſe of the remarkable inequality; but how do they diſtinguiſh lands and ſeas? Very eaſily, Madam, for the waters letting part of the light paſs through them, ſend back but a very little, ſo that they appear afar off like ſo many dark ſpots; whereas the lands being ſolid, reflect the whole light, and appear to be more bright and ſhining. The illuſtrious Monſieur Caſſini, a moſt compleat aſtronomer, has diſcovered in the moon ſomething which divided, then re-united, and ſunk in a kind of well: We may very probably ſuppoſe this was a river. Nay, they pretend to be ſo well acquainted with the ſeveral places, that they have given them all names; one they call Copernicus, another Archiamedes, and a third Galileus; there is the Caſpian Sea, the Black Lake, the Porphirite Mountains; in ſhort, they have publiſhed ſuch exact deſcriptions of the moon, that a mere almanack-maker will be no more to ſeek there, than I am in Paris.

I MUST own then, ſays the Marchioneſs, they are very exact; but what they ſay to the inſide of the country, I would very fain know. It is impoſſible, replied I; the moſt learned aſtronomers of our age cannot inform you. You muſt aſk Aſtolfo this queſtion, who was carried into the moon by St. John. I am going to tell you one of the agreeable follies of Arioſto, which I am ſure you will be pleaſed to hear: I muſt confeſs he had better have let St. John alone, whoſe name is ſo worthy of reſpect, but it is a poetical licenſe, and muſt be allowed. The poem, which is called Orlando Furioſo, is dedicated to a cardinal, and a great pope has honoured it with his approbation, which is prefixed to ſeveral of the editions: This is the argument.

'ORLANDO, nephew to Charlemagne, runs mad, 'becauſe the fair Angelica prefers Medore to him. 'Aſtolfo, a knight-errant, finding himſelf one day 'in the Terreſtial Paradiſe, which was upon the top 'of a very high mountain, where he was carried by 'his flying horſe, meets St. John there, who tells 'him, if he would have Orlando cured, he muſt 'make a voyage with him into the moon. Aſtolfo, 'who had a great mind to ſee new countries, did 'not ſtand much upon intreaty; there immediately 'came a fiery chariot, which carried the apoſtle and 'the knight up into the air. Aſtolfo, being no great 'philoſopher, was ſurpriſed to find the moon ſo much 'bigger than it appeared to him when he was upon 'the earth; to ſee rivers, ſeas, mountains, cities, 'foreſts; nay, what would have ſurpriſed me too, 'nymphs hunting in thoſe foreſts; but that which 'appeared moſt remarkable, was a valley where you 'might find any thing that was loſt in our world, of 'what nature ſoever; crowns, riches, ſame, and 'an infinity of hopes; the time we ſpend in play, 'and in ſearching for the philoſopher's ſtone, the 'alms we give after our death, the verſes we pre'ſent to great men and princes, and the ſighs of 'lovers.'

I DO not know, ſays the Marchioneſs, what became of the ſighs of lovers in Arioſto's time, but I fancy there are very few of them aſcend to the moon in our days. Ah, Madam, replied I, how many does your ladyſhip ſend thither every day? Thoſe that are addreſſed to you will make a conſiderable heap; and I aſſure you the moon keeps all ſafe that is loſt here below: Yet I muſt tell you, Arioſto does but whiſper it; though every thing is there, even the donation of Conſtantine: (the popes having pretended to be maſters of Rome and Italy, by virtue of a donation of which the emperor Conſtantine made Silveſter; and the truth of it is, no body knows what is become of it: But what do you think is not to be found in the moon? Folly: All that ever was upon the earth is kept there ſtill; but in lieu of it, it is to be imagined how many wits (if I may ſo call them) that are loſt here, are got up into the moon, they are ſo many phials full of a very ſubtile liquor, which evaporates immediately, if it be not well ſtopped; and upon every one of thoſe phials the names are written to whom the wits belong: I think Arioſto has heaped them upon one another a little confuſedly, but for order's ſake we will fancy them placed upon ſhelves in a long gallery. Aſtolfo wondered to ſee ſeveral phials full, inſcribed with the names of perſons whom he thought conſiderable for their wiſdom. To confeſs the truth, I begin to fear, ſince I have entertained you with thoſe philoſophical and poetical viſions, mine there is not very empty; however, it is ſome conſolation to me, that while you are ſo attentive, you have a little glaſs full, as well as your humble ſervant: The good knight found his own wits among the reſt, and with St. John's leave, ſnuffed it all up his noſe, like ſo much Hungary water; but Arioſto ſaid he did not carry it far, it returned again to the moon a little after

The love of one fair northern laſs,
Sent back his wit unto the place it was.

WELL, he did not forget Orlando's phial, which was the occaſion of his voyage; but he was curſedly plagued to carry it, for the hero's wits were naturally very heavy, and there did not want one drop of it: To conclude, Arioſto, according to his laudable cuſtom of ſaying whatever he pleaſes, addreſſes himſelf to his miſtreſs in the following beautiful verſes.

Fair miſtreſs who for me to heaven ſhall fly,
To bring again from thence my wand'ring wit;
Which I ſtill loſe, ſince from that piercing eye
The dart came forth that firſt my heart did hit:
Nor of my loſs complain at all would I,
Might I but keep that which remaineth yet;
But if it ſtill decreaſe within ſhort ſpace,
I doubt I ſhall be in Orlando's caſe.
Yet, well I wot where to recover mine,
Tho' not in paradiſe, nor Cynthia's ſphere,
Yet doubtleſs in a place no leſs divine,
In that ſweet face of yours, in that fair hair,
That ruby lip, in thoſe two ſtar-like eyn,
There is my wit, I know it wanders there,
And with my lips, if you would give me leave,
I there would ſearch, I thence would it receive,
[Sir J. Harrington, tranſlation.

Is not this very merry? To reaſon like Arioſto, the ſafeſt way of loſing our wits, is to be in love; for you ſee they do not go far from us, we may recover them again at our lips; but when we loſe them by other means, as for example, by philoſophizing, they are gone with a jerk into the moon, and there is no coming at them again when we would. However, ſays the Marchioneſs, our phials have an honourable ſtation among the philoſophers, among whom it is forty to one, but love fixes our wits on an object we cannot but be aſhamed of: But to take away mine entirely, pray tell me very ſeriouſly, if you believe there are any men in the moon, for, methinks, hitherto you have not been very poſitive: For my part, ſays I, I don't believe there are men in the moon; do but obſerve how much the face of Nature is changed between this and China; other viſages, ſhapes, manners; nay, almoſt other principles of reaſon; and therefore between us and the moon the alteration muſt be much more conſiderable. In the lands that have been lately diſcovered, we can ſcarce call the inhabitants men, they are rather animals in human ſhape, and that too ſometimes very imperfect, almoſt without human reaſon; he therefore who will travels to the moon, muſt not expect to find men there.

What ſort of people are they then, ſays the lady, with an air of impatience? Troth, Madam, replied I, I do not know; for put the caſe that we ourſelves inhabited the moon, and were not men, but rational creatures; could we imagine, do you think, ſuch fantaſtical people upon the earth, as mankind are? Is it poſſible we ſhould have an idea of ſo ſtrange a compoſition, a creature of ſuch fooliſh paſſions, and ſuch wiſe reflexions? Allotted ſo ſmall a ſpan of life, and yet purſuing views of ſuch extent? So learned in trifles, and ſo ſtupidly ignorant in matters of the greateſt importance? So much concerned for liberty, and yet ſuch great inclinations to ſervitude? So deſirous of happineſs, and yet ſo very incapable of attaining it? The people in the moon muſt be wiſe indeed to ſuppoſe all this of us. But do not we ſee ourſelves continually, and cannot ſo much as gueſs how we were made? So that we are forced to ſay, the gods when they created us were drunk with nectar; and when they were ſober again, could not chuſe but laugh at their own handy-work. Well, well, ſays the Marchioneſs, then we are ſafe enough; the inhabitants of the moon know nothing of us, but I could wiſh we were a little better acquainted with them; for it troubles me that we ſhould ſee the moon above us, and yet not know what is done there. Why, ſays I, are not you as much concerned for that part of the earth which is not yet diſcovered? What creatures inhabit it, and what they do there? For we and they are aboard the ſame ſhip; they poſſeſs the prow, and we the poop, and yet there is no manner of communication between us; they know not at the end of the veſſel, who lives, or what is done at the other; and you would know what paſſes in the moon, which is another great ſhip, ſailing in the heavens at a vaſt diſtance from us.

Oh, ſays ſhe, as for the earth, I reckon it all as good as diſcovered, and can gueſs at the people though I never heard a word of them. It is certain they all very much reſemble us, and we may know them better, whenever we will. Let them ſtay where they are. It is only going to ſee them; but we cannot get into the moon if we would, ſo that I deſpair of knowing what they do there. You will laugh at me, ſays I, if I ſhould anſwer you ſeriouſly; perhaps I may deſerve it, and yet, I fancy, I can ſay a great deal in defence of a whim that is juſt now come into my head; nay, to uſe the fool's beſt argument, I will lay a wager I will make you own (in ſpite of reaſon) that one of theſe days there may be a communication between the earth and the moon, and who knows what great advantages we may reap by it? Do but conſider America before it was diſcovered by Columbus, how profoundly ignorant were thoſe people; they knew nothing at all of arts and ſciences, they went naked, had no other arms but bows and arrows, and did not apprehend they might be carried by animals; they looked upon the ſea as a wide ſpace, not for the uſe of men, but thought it was joined to the heavens, and beyond it was nothing: It is true, after having ſpent whole years in hollowing the trunks of great trees with ſharp ſtones, they put themſelves to ſea in theſe trunks, and floated from land to land, as the wind and waves drove them; but how often was their trough overſet, and they forced to recover it again by ſwimming? So that (except when they were on land) it might be ſaid they were continually ſwimming: And yet had any one but told them of another kind of navigation, incomparably more perfect and uſeful than their own, that would eaſily convey over that infinite ſpace of water, that they might ſtop in the middle of the waves and in ſome ſenſe command the winds, and make their ſhip ſail faſt, or ſlow, as they pleaſed; in ſhort, that this impaſſable ocean ſhould be no obſtacle to their converſing with another different people; do you think they would have believed you? And yet at laſt that day is come; the unheard of, and moſt ſurpriſing ſight appears; enormous bodies, with white wings, are ſeen to fly upon the ſea; to vomit fire from all parts; and to caſt on their ſhores an unknown people, ſcaled over with iron, who diſpoſe and govern monſters as they pleaſe, carry thunder in their hands, and deſtroy whoever reſiſts them: From whence came they? Who brought them over the ſea? Who gave them the diſpoſal of the fire of heaven? Are they gods? Are they the offspring of the ſun? For certainly they are not men.

We think ourſelves obliged in juſtice to the memory of Monſieur Fontenelle, to obſerve in this place, that Mr. Dryden's celebrated deſcription of a ſhip was taken from our author, the Plurality of Worlds being written by him, and tranſlated by Mrs. Behn, ſome years before the Indian Emperor was brought upon the ſtage.

Compare Guyomar's deſcription with Fontenelle, as it here follows:

The object I could firſt diſtinctly view,
Was tall trees which on the waters flew,
Wings on their ſides inſtead of leaves did grow,
Which gather'd all the breath the winds could blow,
And at their roots grew floating palaces,
Whoſe out-blow'd bellies cut the yielding ſeas.
All turn'd their ſides, and to each other ſpoke.
I ſaw their words break out in fire and ſmoke.
Sure 'tis their voice that thunders from on high,
Or theſe the younger brothers of the ſky.

Do but conſider, Madam, the ſurpriſe of the Americans, there can be nothing greater; and after this, will any one ſay there ſhall never be a communication between the moon and the earth. Did the Americans believe there would ever be any between them and Europe, till they ſaw it? It is true, you muſt paſs this great ſpace of air and heaven, which is between the earth and the moon; but did not thoſe vaſt ſeas ſeem at firſt as impaſſable to the Americans? You rave, I think, ſays ſhe. Who denies it, Madam, ſaid I? Nay, but I will prove it, replies ſhe; I do not care for your bare owning it: Did you not own the Americans were ſo ignorant, that they had not the leaſt conception of croſſing the ſea; but we, who know a great deal more than they, can imagine and fancy the going through the air, though we are aſſured it is not to be done. It is ſomewhat more than fancy, replied I, when it has been already practiſed; for ſeveral have found the ſecret of faſtening wings, which bear them up in the air, to move them as they pleaſe, and to fly over rivers, and from ſteeple to ſteeple; I cannot ſay indeed they have yet made an eagle's flight, or that is does not coſt now and then a leg or an arm to one of theſe new birds; but this may ſerve to repreſent the firſt planks that were launched on the water, and which were the beginning of navigation; there were no veſſels then thought of to ſail round the world in, and yet you ſee what great ſhips are grown by little and little, from thoſe rude planks The art of flying is but newly invented; it will improve by degrees, and in time grow perfect; then we may fly as far as the moon. We do not yet pretend to have diſcovered all things, or that what we have diſcovered can receive no addition; and therefore, pray let us agree, there are yet many things to be done in the ages to come. Were you to live a thouſand years, ſays the Marchioneſs, I can never believe you will fly, but you muſt endanger your neck. I will not, replied I, be ſo unmannerly as to contradict a fair lady; but though we cannot learn the art here, I hope you will allow they may fly better in the moon; it is no great matter whether we go to them, or they come to us, we ſhall then be like the Americans, who knew nothing of navigation, and yet there were very good ſhips at the other end of the world. Were it ſo, ſays ſhe, in a ſort of a paſſion, the inhabitants of the moon would have been here before now. All in good time, ſays I, the Europeans were not in America till about 6000 years; ſo long were they in improving navigation to the point of croſſing the ocean. The people in the moon have already made ſome ſhort voyages in the air; they are exerciſing continually, and by degrees will be more expert, and when we ſee them, God knows how we ſhall be ſurprized. It is unſufferable, ſays ſhe, you ſhould banter me at this rate, and juſtify your ridiculous fancy by ſuch falſe reaſoning. I am going to demonſtrate, ſays I, that you reproach me very unjuſtly: Conſider, Madam, that the world is unfolded by degrees; for the ancients were very poſitive, that both the torrid and frigid zones were not habitable, by reaſon of their exceſſive heat and cold; and in the time of the Romans, the general map of the world was but very little extended beyond that of their own empire; which though in one reſpect, expreſſed much grandeur; in another ſenſe, was a ſign of as great ignorance; however, there were men found both in very hot and very cold countries, ſo that you ſee the world is already increaſed; after this, it was thought that the ocean covered the whole earth, except what was then diſcovered: There was no talk of the Antipodes, nor ſo much as a thought of them, for who could fancy their heels at top, and their heads at bottom? And yet, after all their fine reaſoning, the Antipodes were diſcovered. Here is now another half of the world ſtarts up, and a new reformation of the map. Methinks this, Madam, ſhould reſtrain us, and teach us not to be ſo poſitive in our opinions; the world will unfold itſelf more to us hereafter; we ſhall then know the people in the moon, as well as we do now the Antipodes; but all things muſt be done in order, the whole earth muſt be firſt diſcovered; and till we are perfectly acquainted with our own habitation, we ſhall never know that of our neighbours. Without fooling, ſays the Marchioneſs, looking earneſtly upon me, you are very profound in this point, that I begin to think you are in earneſt, and believe what you ſay. Not ſo neither, ſays I, but I would ſhew you, Madam, how eaſy it is to maintain a chimerical notion, that may perplex a man of underſtanding, but never convince him; there is not any argument ſo perſuaſive as truth, which has no need to exert all its proofs, but enters naturally into our underſtanding; and when once we have learned it, we do nothing but think of it. I thank you then, ſays ſhe, for impoſing on me no longer: for I confeſs your falſe reaſoning diſturbed me, but now I ſhall ſleep very quietly, if you think fit to retire for to-night.

The Third Evening.

Particulars concerning the World in the Moon, and Proof of the other Planets being habitable.

THE Marchioneſs was ſo intent upon her notions, that ſhe would fain have engaged me, the next day, to proceed where I left off; but I told her, ſince the moon and ſtars were become the ſubject of our diſcourſe, we ſhould truſt our chimeras with nobody elſe; at night therefore, we went again into the park, which was now wholly dedicated to our learned converſation.

WELL, Madam, ſays I, I have great news for you; that which I told you laſt night, of the moon's being inhabited, may be otherwiſe now. There is a new fancy got into my head, which puts thoſe people in great danger. I cannot, ſays her ladyſhip, ſuffer ſuch whims to take place. Yeſterday you were preparing me to receive a viſit from the Lunarians, and now you would inſinuate there are no ſuch folks. You muſt not trifle with me thus; once you would have me believe the moon was inhabited; I ſurmounted that difficulty, and do now believe it. You are a little too nimble, replied I; did not I adviſe you never to be entirely convinced of things of this nature, but to reſerve half of your underſtanding free and diſengaged, that you might admit of a contrary opinion, if there ſhould be occaſion. I care not for your ſuppoſitions, ſays ſhe, let us come to matter of fact. Are we not to conſider the moon as St. Dennis? No, ſays I, the moon does not ſo much reſemble the earth, as St. Dennis does Paris: The ſun draws vapours from the earth, and exhalations from the water, which mounting to a certain height in the air, do there aſſemble, and form the clouds; theſe uncertain clouds are driven irregularly round the globe, ſometimes ſhadowing one country, and ſometimes another; he then who beholds the earth from afar off, will ſee frequent alterations upon its ſurface, becauſe a great country, overcaſt with clouds, will appear dark or light, as the clouds ſtay, or paſs over it; he will ſee the ſpots on the earth often change their place, and appear or diſappear as the clouds remove; but we ſee none of theſe changes wrought upon the moon, which would certainly be the ſame, were there but clouds about her; yet on the contrary, all her ſpots are fixed and certain, and her light parts continue where they were at firſt, which indeed is a great misfortune; for by this reaſon, the ſun draws no exhalations or vapours above the moon; ſo that it appears ſhe is a body infinitely more hard and ſolid than the earth; whoſe ſubtle parts are eaſily ſeparated from the reſt, and mount upwards as ſoon as heat puts them in motion: But it muſt be a heap of rock and marble, where there is no evaporation; beſides, exhalations are ſo natural and neceſſary, where there is water, that there can be no water at all, where there is no exhalation; and what ſort of inhabitants muſt thoſe be, whoſe country affords no water, is all rock, and produces nothing? This is very fine, ſays the Marchioneſs, you have forgot ſince you aſſured me, we might from hence diſtinguiſh ſeas in the moon. Pray what is become of your Caſpian ſea, and your Black Lake? All conjecture, Madam, replied I, though for your ladyſhip's ſake, I am very ſorry for it, for thoſe dark places we took to be ſeas, may perhaps be nothing but large cavities, it is hard to gueſs right at ſo great a diſtance. But will this ſuffice then, ſays ſhe, to extirpate the people in the moon? Not altogether, replied I, we will neither determine for nor againſt them. I muſt own my weakneſs, (if it be one) ſays ſhe, I cannot be ſo perfectly undetermined as you would have me to be, but muſt believe one way or other; therefore, pray fix me quickly in my opinion, as to the inhabitants of the moon; preſerve or annihilate them as you pleaſe; and yet methinks, I have a ſtrange inclination for them, and would not have them deſtroyed, if it were poſſible to ſave them. You know, ſays I, Madam, I can deny you nothing; the moon ſhall be no longer a deſart, but to do you ſervice, we will re-people her. Since to all appearance the ſpots in the moon do not change, I cannot perceive there are any clouds about her, that ſometimes obſcure one part, and ſometimes another, yet this does not hinder, but that the moon ſends forth exhalations and vapours. The clouds, which we ſee in the air, are nothing but exhalations and vapours, which at their coming out of the earth, were ſeparated into ſuch minute particles, that they could not be diſcerned; but as they aſcend higher, they are condenſed by the cold, and by the re-union of their parts, are rendered viſible; after which they become great clouds, which fluctuate in the air, their improper region, till they return back again to us in rain: however, theſe exhalations and vapours ſometimes keep themſelves ſo diſperſed, that they are imperceptible; or if they do aſſemble, it is in forming ſuch ſubtle dews, that they cannot be diſcerned to fall from any cloud. Now, as it ſeems incredible the moon ſhould be ſuch a maſs, that all its parts are of an equal ſolidity, all at reſt with one another, and all incapable of any alterations from the efficacy of the ſun; I am ſure we are yet unacquainted with ſuch a body: marble itſelf is of another nature, and even that which is moſt ſolid, is ſubject to change and alteration; either from the ſecret and inviſible motion it has within itſelf, or from that which it receives from without: It may ſo happen that the vapours which iſſue from the moon, may not aſſemble round her in clouds, and may not fall back again in rain, but only in dews. It is ſufficient for this, that the air with which the moon is ſurrounded (for it is certain ſhe is ſo, as well as the earth) ſhould ſomewhat vary from our air, and the vapours of the moon be a little different from thoſe of the earth, which is very probable. Hereupon the matter being otherwiſe diſpoſed in the moon than on the earth, the effects muſt be very different; though it is of no great conſequence whether they are or no; for from the moment we have found an inward motion in the parts of the moon, or one produced by foreign cauſes, here is enough for the new birth of its inhabitants, and a ſufficient and neceſſary fund for their ſubſiſtence. This will furniſh us with corn, fruit, water, and what elſe we pleaſe; I mean according to the cuſtom or manner of the moon, which I do not pretend to know; and all proportioned to the wants and uſes of the inhabitants, with whom, I own, I am as little acquainted.

THAT is to ſay, replied the Marchioneſs, you know all is very well, without knowing how it is ſo; which is a great deal of ignorance founded upon a very little knowledge; however I comfort myſelf, that you have reſtored the moon her inhabitants again, and have enveloped her in an air of her own, without which a planet would ſeem to me but very naked.

IT is theſe two different airs, Madam, that hinder the communication of the two planets; if it was only flying, as I told you yeſterday, who knows but we might improve it to perfection, though I confeſs there is but little hopes of it; the great diſtance between the moon and the earth is a difficulty not eaſily to be ſurmounted; yet were the diſtance but inconſiderable, and the two planets almoſt contiguous, it would be ſtill impoſſible to paſs from the air of the one, into the air of the other. The water is the air of the fiſhes, they never paſs into the air of the birds, nor the birds into the air of the fiſhes; and yet it is not the diſtance that hinders them, but both are impriſoned by the air they breathe in; we find our air conſiſts of thicker and groſſer vapours than the air of the moon. So that one of her inhabitants arriving at the confines of our world, as ſoon as he enters our air, will inevitably drown himſelf, and we ſhall ſee him fall dead on the earth.

I SHOULD rejoice, ſays the Marchioneſs, to ſee a wreck of a good number of theſe lunar people; how pleaſant would it be to behold them lie ſcattered on the ground, where we might conſider at our eaſe, their extraordinary figures? But, replied I, ſuppoſe they could ſwim on the outward ſurface of our air, and be as curious to ſee us, as you are to ſee them; ſhould they angle, or caſt a net for us, as for ſo many fiſh, would that pleaſe you? Why not, ſays ſhe, ſmiling? For my part, I woud go into their nets of my own accord, were it but for the pleaſure of ſeeing ſuch ſtrange fiſhermen.

CONSIDER, Madam, you would be very ſick, when you were drawn to the top of our air, for there is no reſpiration in its whole extent, as may be ſeen on the tops of ſome very high mountains: And I admire that they who have the folly to believe that fairies, whom they allow to be corporeal, and to inhabit the moſt pure and refined air: do not tell us, that the reaſon why they give us ſuch ſhort and ſeldom viſits, is, that there are very few among them who can dive; and thoſe that can, if it be poſſible to get through the thick air where we are, cannot ſtay half ſo long in it as your diving fowls can in the water. Here then are natural barricades, which defend the paſſage out of our world, as well as the entrance into the moon; and as we can only gueſs at that world, let us fancy all we can of it. For example, I will ſuppoſe that we may there ſee the firmament, the ſun, and the ſtars, of another colour than what they are here; all theſe appear to us through a kind of natural optics, which change and alter the object. Theſe ſpectacles, as we may call them, are our air, mixed as it is with vapours and exhalations, and which does not extend itſelf very high. Some of our modern philoſophers pretend, that of itſelf it is blue, as well as the water of the ſea, and that this colour neither appears in the one nor in the other, but at a great depth; the firmament, ſay they, where the fixed ſtars are placed, has no peculiar light of its own, and by conſequence muſt appear black; but we ſee it through the air, which is blue, and therefore to us it appears blue; which if ſo, the beams of the ſuns and ſtars cannot paſs through the air without being tinged a little with its colour, and loſing as much of their own; yet, were the air of no colour, it is very certain, that through a great miſt the light of a flambeau at ſome diſtance appears red, though it be not its true natural colour. Our air is nothing but a great miſt, which changes the true colour both of the ſky, ſun, and ſtars, it belongs only to the celeſtial matter to bring us the light and colours as they really are, in all their purity;

rity; ſo that ſince the air of the moon is of another nature than our air, or is diverſified by another colour, or at leaſt is another kind of miſt, which varies the colours of the celeſtial bodies; in ſhort, as to the people of the moon, their ſpectacles, through which they ſee every thing, are changed.

If it be ſo, ſays the Marchioneſs, I prefer this abode before that of the moon; I cannot believe the celeſtial colours are ſo well mixed as they are here, for inſtance, let us put green ſtars on a red ſky, they cannot be ſo agreeable as ſtars of gold on an azure firmament. One would think, Madam, you was chuſing a petticoat, or a ſuit of knots; but, believe me, Nature does not want fancy; leave it to her to chuſe colours for the moon, and I will engage they ſhall be well ſorted; ſhe will not fail to vary the proſpect of the univerſe, at every different point of ſight, and the alteration ſhall always be very agreeable.

I know very well, ſays the Marchioneſs, her ſkill in this point, ſhe is not at the charge of changing the objects, but only the optics, and has the credit of this great variety, without being at any expence; with a blue air, ſhe gives us a blue firmament; and perhaps with a red air, ſhe gives to the inhabitants of the moon a red firmament, and yet ſtill it is but the ſame firmament; nay, I am of opinion, ſhe has placed this ſort of ſpectacles in our imagination, through which we ſee all things, and which to every particular man changes the objects. Alexander looked on the earth as a fit place to eſtabliſh a great empire, it ſeemed to Celadon a proper reſidence for Aſtræa, and it appeared to a philoſopher a great planet in the heavens, covered with fools; I do not believe the ſights vary more between the earth and the moon, than they do between the fancies of two different men.

This change in our imaginations, ſays I, is very ſurpriſing, for they are ſtill the ſame objects, though they appear different; when in the moon, we may ſee other objects we do not ſee here, or at leaſt, not ſee all there we do ſee here; perhaps, in that country they know not any thing of the dawn and the twilight, before the ſun riſes, and after the ſun ſets; the air which encompaſſeth, and is above us, receives the rays, ſo that they cannot ſtrike on the earth; and being groſs, ſtops ſome of them, and ſends them hither, though indeed they were never naturally deſigned us; ſo that the day-break and the twilight are a favour which Nature beſtows on us; they are lights which do not fall to our ſhare, and which ſhe gives us over and above our due; but in the moon, where the air is apparently more pure, and therefore not ſo proper to ſend down the beams it receives from the ſun before his riſing, and after his ſetting, theſe poor wretches have not that light of grace (as I may call it) which growing ſtronger by degrees, does more agreeably prepare them for the arrival of the ſun; and which growing weaker, and weaker, and diminiſhing by degrees, does inſenſibly prepare them for the ſun's departure, but they are in a profound darkneſs, where a curtain (as it were) is drawn all on a ſudden, their eyes are immediately dazzled with the whole light of the ſun, in all its glory and brightneſs; ſo likewiſe, they are on a ſudden enveloped with utter darkneſs; the night and the day have no medium between them, but they fall in a moment from one extreme to another. The rainbow likewiſe is not known to the inhabitants of the moon, for if the dawn is an effect of the groſsneſs of the air and vapours, the rainbow is formed in the clouds, and from whence the rain falls; ſo that the moſt beautiful things in the world are produced by thoſe things which have no beauty at all. Since then there are no vapours thick enough, nor no clouds of rain about the moon, farewel dawn, adieu rainbow: What muſt lovers do for ſimiles to compare their miſtreſſes to, in that country, when ſuch an inexhauſtible fund of compariſons is taken from them?

NAY, I ſhall never lay the loſs of their compariſons much to heart, ſays the lady, and I think them well enough recompenſed for the loſs of our dawn, and rainbow; for by the ſame reaſon, they have neither thunder nor lightning, both which are formed in the clouds: How glorious are their days, the ſun continually ſhining? How pleaſant their nights, when not the leaſt ſtar is hid from them? They never hear of ſtorms or tempeſts, which ſeem plain effects of the wrath of heaven. Do ye think then they ſtand in need of our pity? You are deſcribing the moon, ſays I, like an enchanted iſland: but do you think it is ſo pleaſant to have a ſcorching ſun always over our heads, where the days are fifteen times as long as ours, and not the leaſt cloud to moderate its heat? Though I fancy it is for this reaſon that Nature has made great cavities in the moon; we can diſcern them eaſily with our teleſcopes, for they are not mountains, but ſo many wells or vaults in the middle of a plain; and how can we tell but the inhabitants of the moon (being continually broiled by the exceſſive heat of the ſun) retire into thoſe great wells; perhaps they live no where elſe, and it is there they build them cities; for we ſtill ſee in the ruins of old Rome that part of the city which was underground, was almoſt as large as that which was above. We need but take that part away, and the reſt would remain like one of theſe lunar towns; the whole people reſide in wells, and from one well to another there are ſubterraneous paſſages for the communication of the inhabitants. I perceive, Madam, you laugh at me, and you are welcome; but to be free with your ladyſhip, the ridicule turns more againſt you than me: For you believe the people in the moon muſt live upon the ſurface of their planet, becauſe we do ſo upon ours, but the contrary is evident; for as we dwell upon the ſuperficies of our planet, they cannot dwell upon the ſuperficies of theirs; if things differ ſo much in this world, what muſt they do in another.

It is no matter, ſays the lady, I can never ſuffer the inhabitants of the moon to live in perpetual darkneſs. You will be more concerned for them, Madam,

dam, when I tell you that one of the ancient philoſophers long ſince diſcovered the moon to be the reſidence of bleſſed ſouls departed out of this life, and that all their happineſs conſiſted in hearing the muſic of the ſpheres, which is made by the motion of the celeſtial bodies: and that philoſopher pretending to know exactly all they do there, he tells you, that when the moon is obſcured by the ſhadow of the earth, they no longer hear the heavenly harmony, but howl like ſo many ſouls in purgatory; ſo that the moon, taking pity on them, makes all the haſte ſhe can to get into the light again. Methinks then, ſays the Marchioneſs, we ſhould now and then ſee ſome of theſe bleſſed ſouls arrive here from the moon, for certainly they are ſent to us; and between the two planets, ſome think, there is a ſufficient proviſion made for the felicity of ſouls, by their tranſportation into a new world. I confeſs indeed, ſays I, it would be very pleaſant to ſee new worlds; ſuch a voyage, though but in imagination, is very delightful; but what would it be in reality? It would be much better certainly than to go to Japan, which at beſt, is but crawling from one end of the globe to the other, and after all, to ſee nothing but men. Well then, ſays ſhe, let us travel over the planets as faſt as we can; what ſhould hinder us? Let us place ourſelves at all the different proſpects, and from thence conſider the univerſe. But firſt, have we any more to ſee in the moon? Yes, Madam, replied I, our deſcription of that world is not entirely exhauſted; you cannot but remember that the two movements, which turn the moon on herſelf and about

bout us, being equal; the one always preſents to our eyes that part, of which the other muſt conſequently deprive us; and ſo ſhe always to us wears the ſame face: We have then but one moiety of her which looks on us, and as the moon muſt be ſuppoſed not to turn on her own centre, in reſpect to us, that moiety which ſees us always, and that which never ſees us, remains fixed in the ſame point of the firmament. When it is night with her, and her nights are equal to 15 of our days, ſhe at firſt ſees but a little corner of the earth enlightened, after that a larger ſpot, and ſo almoſt by hourly gradations, ſpreads her light till it covers the whole face of the globe; whereas theſe ſame changes do not appear to us to affect the moon, but from one night to another, becauſe we loſe her a long time out of our ſight. I would give any thing that I could poſſibly fathom the awkward reaſonings of the philoſophers of their world upon our earth's appearing immoveable to them, when all the other celeſtial bodies riſe and ſet over their heads, within the compaſs of 15 days. It is plain they attribute this immobility to her bigneſs, for ſhe is 40 times larger than the moon; and when their poets have a mind to extol indolent princes, I doubt not but they take care to compare their inactivity to this majeſtic repoſe of the earth. However, this opinion is attended with one difficulty; they muſt very ſenſibly perceive in the moon, that our earth turns upon her own centre. For inſtance, imagine that Europe, Aſia, and America preſent themſelves one after another to them in miniature, and in different ſhapes and figures, almoſt as we ſee them upon maps. Now this ſight muſt be a novelty to ſuch travellers as paſs from that moiety of the moon which never ſees us, to that which always does. Good God! how cautious would they be of believing the relation of the firſt travellers, who ſhould ſpeak of it after their return to that great country, to which we are ſo utterly unknown? Now I fancy, ſays the Marchioneſs, that they make a ſort of pilgrimage from one ſide of the country to the other, for their diſcoveries in our world; and that there are certain honours and privileges aſſigned to ſuch as have once in their lives had a view of our groſs planet. At leaſt, replied I, thoſe who have had this view, obtained the privilege of being better lighted, during their nights; the reſidence in the other moiety of the moon muſt of neceſſity be much leſs commodious in that reſpect. But let us continue the journey we propoſed to take, Madam, from one planet to another, for we have now had a pretty curious ſurvey of the moon.

As we leave the moon, on that ſide next the ſun, we ſee Venus, which puts me again in mind of St. Dennis. Venus turns upon herſelf, and round the ſun, as well as the moon; they likewiſe diſcover by their teleſcopes, that Venus, like the moon (if I make ſpeak after the ſame manner) is ſometimes new, ſometimes full, and ſometimes in the wane, according to the different ſituations ſhe is in, with reſpect of the earth.

The moon, to all appearance, is inhabited, why ſhould not Venus be ſo too? You are ſo full of your whys, and your wherefores, ſays the Marchioneſs, interrupting me, that I fancy you are ſending colonies to all the planets. You may be certain, Madam, that is my intention, and I ſee no reaſon to the contrary; we find that all the planets are of the ſame nature, all obſcure bodies, which receive no light but from the ſun, and then ſend it to one another; their motions are the ſame, ſo that hitherto they are alike; and yet if we are to believe that theſe vaſt bodies are not inhabited, I think they were made but to little purpoſe: Why ſhould Nature be ſo partial, as to except only the earth? But let who will ſay the contrary, I muſt believe the planets are peopled as well as the earth. I find, ſays the lady, you have been very well confirmed in your notions this pretty while: It was but ſome moments ſince, that the moon was a deſart, and you were in no concern at it; and at this inſtant, I ſee you would be in a violent paſſion if any one ſhould preſume to ſay, that all the planets are not as well ſtocked with inhabitants as the earth. It is true, Madam, at the inſtant you ſurpriſed me with your objections, if you had diſputed with me, the inhabitants of the planets, I ſhould not only have maintained their exiſtence, but perhaps likewiſe have treated on their creation. We have our ſeaſons of credulity, and I never believed theſe things more firmly than at that juncture: and even now, and when my ſenſes are ſomewhat cooler on the matter, I cannot help thinking it would be ſtrange that the earth ſhould be ſo well peopled, and the other planets not inhabited at all: For do you believe

lieve we diſcover (as I may ſay) all the inhabitants of the earth? There are as many kinds of inviſible, as viſible creatures; we ſee from the elephant to the very piſmire, beyond which our ſight fails us, and yet counting from that minute creature there are an infinity of leſſer animals, which would be imperceptible, without the aid of glaſſes. We ſee with magnifying glaſſes that the leaſt drop of rain water, vinegar, and all other liquids, are full of little fiſhes, or ſerpents, which we could never have ſuſpected there; and philoſophers believe that the acid taſte of theſe liquids proceeds from a ſharpneſs iſſued through the forked ſtings of theſe animals lodged under their tongues. And therefore, by mixing certain things with any one of theſe liquors, and expoſing them in the ſun, or letting them ſtand and corrupt, will produce a new ſpecies of little animals.

SOME even of the moſt ſolid bodies, are nothing but an immenſe ſwarm of imperceptible objects, who find for their reſpective motions as much room and liberty as they require. A mulberry leaf is a little world, inhabited by multitudes of theſe inviſible worms, which, to them, is a country of vaſt extent. What mountains, what abyſſes are there in it? The inſects on one ſide of this leaf, know no more of their fellow creatures on the other, than you and I can tell what they are now doing at the Antipodes: Does it not appear therefore, more reaſonable, that a great planet ſhould be inhabited? In the hardeſt ſtones, for example, in marble, there are an infinity of worms, which fill up the vacuums, and feed upon the ſubſtance of the ſtone: fancy then millions of living creatures to ſubſiſt many years on a grain of ſand; ſo that were the moon but one continued rock, I would ſooner allow her to be gnaw'd by theſe inviſible mites, than not to be inhabited: In ſhort, every thing is animated; imagine then thoſe animals which are yet undiſcovered, and add them and theſe which are but lately diſcovered, to what we have always ſeen, and you will find the earth ſwarm with inhabitants, and that Nature has ſo liberally furniſhed it with animals, that ſhe is not at all concerned for our not ſeeing above one half of them: Why then ſhould Nature, which is fruitful to an exceſs here, be ſo very ſterile in the reſt of the planets, as to produce no living things in them? I muſt own, ſays the Marchioneſs, you have convinced my reaſon, but you have confounded my fancy with ſuch variety, that I cannot imagine how nature, which abhors repetition, ſhould produce ſo many different kinds. There is no need of fancy, Madam, do but truſt your eyes, and you will eaſily perceive how Nature diverſifies in theſe ſeveral worlds.

ALL human faces, in general, are of the ſame model; and yet the Europeans and the Africans have two particular moulds, nay, commonly every family has a different aſpect, what ſecret then has Nature to ſhew ſo much variety in the ſingle face? Our world, in reſpect of the univerſe, is but a little family, wherein every face has ſome reſemblance to each other; in another planet is another family, whoſe faces have a different air and make; the difference too increaſes with the diſtance, for whoſoever ſhould ſee an inhabitant of the moon, and an inhabitant of the earth, would ſoon perceive they were nearer neighbours than one of the earth and one of Saturn: Here, for example, we have the uſe of voice; in another world, they ſpeak by ſigns; and at a greater diſtance they do not ſpeak at all: Here our reaſon is formed by experience; in the next world, experience contributes but little towards reaſon, and, in the next to that, old men know no more than children. Here we are troubled more with what is to come than with what is paſt. In the next world they are more troubled for what is paſt, than what is to come; and farther off, they are not concerned with either, which, by the bye, I think, is the much better: Here it is thought we want a ſixth ſenſe, that would teach us many things, of which we are now ignorant; this ſixth ſenſe is apparently in another world, where they want one of the five which we enjoy; nay, perhaps there is a much greater number of ſenſes, but in the partition we have made of them with the inhabitants of the other planets, there are but five fallen to our ſhare, with which we are well contented, for want of being acquainted with the reſt: Our ſciences have bounds, which the wit of man could never paſs; there is a point where they fail us on a ſudden, the reſt is reſerved for other worlds, where ſomewhat which we know, is unknown to them, This planet enjoys the pleaſures of love, but lies deſolate in ſeveral places by the fury of war; in another planet they enjoy perpetual peace, yet in the midſt of that peace, know not any thing of love, and time lies on their hands; in a word, that which Nature practiſes here in little, in diſtributing her gifts among mankind; ſhe does at large in other worlds, where ſhe makes uſe of that admirable ſecret ſhe has to diverſify all things, and at the ſame time makes them equal, by compenſating for the inequality.

But it is not time, Madam, now to be ſerious, how will you diſpoſe of all theſe notions? Trouble not yourſelf, ſays ſhe, Fancy is a great traveller? I already comprehend all theſe worlds, and form to myſelf their different characters and cuſtoms; ſome of them, I aſſure you, are very extraordinary; I ſee, at this moment, a thouſand various figures, though I cannot well deſcribe them. O leave them, ſays I, to your dreams, we ſhall know to-morrow whether they repreſent the matter faithfully, and what they have taught you, in relation to the inhabitants of any of the planets.

The Fourth Evening.

Particulars of the worlds of Venus, of Mercury, of Mars, of Jupiter, and of Saturn.

THE dreams of the Marchioneſs were not very ſucceſsful; they ſtill repreſented to her the ſame objects we are acquainted with here on earth; and I had room to reproach her ladyſhip, as thoſe people do us at the ſight of our regular pictures, who themſelves make only wild and groteſque paintings. Well, ſay they, This is only an imitation of men, there is no manner of fancy in it. We were therefore forced to conclude ourſelves ignorant, what ſort of inhabitants all theſe planets had, and content ourſelves only to gueſs at them, and continue the voyage we had begun through theſe ſeveral worlds.

WE were come to Venus, and I told her, that planet certainly turned on itſelf, though no body could tell in what time, and conſequently were ignorant how long her day laſted; but her year was compoſed of eight months, becauſe it is in that time ſhe turns round the ſun; and ſeeing Venus is 40 times leſs than the earth, the earth appears (to them in Venus) to be a planet 40 times bigger than Venus appears to us on the earth; and as the moon is 40 times leſſer than the earth, ſo ſhe ſeems to be juſt of the ſame magnitude to the inhabitants of Venus, as Venus ſeems here to us.

I SEE then, ſays the lady, that the earth is not to Venus what Venus is to the earth; I mean, that the earth is too big to be the mother of Love, or the ſhepherd's ſtar to Venus; but the moon, which appears to Venus of the ſame bigneſs which Venus appears to us, is aſſigned to be the mother of Love, and ſhepherd's ſtar to Venus; for ſuch names are only proper for a little briſk airy planet, bright and ſhining as the Goddeſs herſelf. O, bleſſed moon, how happy art thou, to preſide over the amours of thoſe inhabitants of Venus, who muſt be ſuch maſters of gallantry! O doubtleſs, ſays I, the very common people of Venus are all Celadons and Sylvanders, and their moſt trivial diſcourſes are infinitely finer than any in Clelia. Their very climate inſpires love: Venus is much nearer than the earth is to the ſun, from whence ſhe receives a more vigorous and active influence.

I FIND, ſays the Marchioneſs, it is eaſy enough to gueſs at the inhabitants of Venus; they reſemble what I have read of the Moors of Granada, who were a little black people, ſcorched with the ſun, witty, full of fire, very amorous, much inclined to muſic and poetry, and ever inventing maſques and tournaments in honour of their miſtreſſes. Pardon me, Madam, ſays I, you are little acquainted with this planet; Granada in all its glory, was a perfect Greenland to it; and your gallant Moors, in comparison with that people, were as ſtupid as ſo many Laplanders.

But what do you think then of the inhabitants of Mercury? They are yet nearer to the ſun, and are ſo full of fire, that they are abſolutely mad: I fancy they have not any memory at all, no more than moſt of the Negroes: that they make no reflections, and what they do is by ſudden ſtarts, and perfect hap-hazard; in ſhort, Mercury is the Bedlam of the univerſe; the ſun appears to them much greater than it does to us, becauſe they are much nearer to it than we; it ſends them ſo vaſt and ſtrong a light, that the moſt glorious day here would be no more with them than a declining twilight; I know not, whether they can diſtinguiſh objects; but the heat, to which they are accuſtomed, is ſo exceſſive, that they would be ſtarved with cold in the torrid zone; their year is but three months, and we know not the exact length of their day, becauſe Mercury is ſo little, and ſo near the ſun; it is (as it were) loſt in its rays, and is very hardly diſcovered by the aſtronomers; ſo that they cannot obſerve how it moves on its centre; but becauſe it is ſo ſmall, they fancy it compleats its motion in a little time; ſo that by conſequence, the day there is very ſhort, and the ſun appears to them like a vaſt fiery furnace, at a little diſtance, whoſe motion is prodigiouſly ſwift and rapid. This is ſo much the better for them, ſince it is evident they muſt long for night; and during their night, Venus and the earth (which muſt appear conſiderably large) give light to them: As for the other planets which are beyond the earth, towards the firmament, they appear leſs to the inhabitants of Mercury, than they do to us here, and they receive but little light from them, perhaps none at all; the fixed ſtars likewiſe ſeem to them leſs, and ſome of them totally diſappear; which, were I there, I ſhould eſteem a very great loſs. I ſhould be very uneaſy to ſee this large convex ſtudded with but few ſtars, and thoſe too of the leaſt magnitude and luſtre.

WHAT ſignifies the loſs of a few fixed ſtars? ſays the lady; I pity them for the exceſſive heat they endure; let us give them ſome relief, and ſend Mercury a few of thoſe cool and refreſhing ſhowers, which continue, ſometimes, four months together, in the hotteſt countries, during their greateſt extremity, Your fancy is good, Madam, replied I, but we will relieve them another way: In China there are countries which are extremely hot by their ſituation; yet, in July and Auguſt are ſo cold, that the rivers are frozen; the reaſon is, they are full of ſalt petre, which being exhaled in great abundance, by the exceſſive heat of the ſun, makes a perfect winter at midſummer. We will fill the little planet with ſalt petre, and let the ſun ſhine as hot as he pleaſes. And yet after all, who knows but the inhabitants of Mercury may have no occaſion either for rain or ſalt petre? If it is a certain truth, that Nature never gives life to any creature, but where that creature may live; then, through cuſtom, and ignorance of a better life, thoſe people may live happily.

After Mercury comes the ſun; but there is no poſſibility of peopling it, nor any room left for a wherefore. By the earth which is inhabited, we judge that other bodies of the ſame nature may be likewiſe inhabited. But the ſun is a body not like the earth, or any of the planets; the ſun is the ſource or fountain of light, which though it is ſent from one planet to another, and receives ſeveral alterations by the way, yet all originally proceeds from the ſun: He draws from himſelf that precious ſubſtance which he emits from all ſides, and which reflects when it meets with a ſolid body, and ſpreads from one planet to another thoſe long and vaſt trains of light which croſs, ſtrike through, and intermingle in a thouſand different faſhions, and make (if I may ſo ſay) the richeſt tiſſues in the world. The ſun likewiſe is placed in the centre, from whence with moſt convenience, he may equally diſtribute and animate by his heat: it is then a particular body, but what kind of body, has oft puzzled better heads than mine. It was thought formerly a body of pure fire, and that opinion paſſed current till the beginning of this age; when they perceived ſeveral ſpots on its ſurface. A little after they had diſcovered new planets, (as we ſhall preſently hear of) theſe ſome ſaid were the ſpots; for thoſe planets moving round the ſun, when they turned their dark half to us, muſt neceſſarily hide part of it; and had not the learned with theſe pretended planets made their court before to moſt of the princes in Europe, giving the name of this prince to one, and of that prince to another planet, I believe they would have quarrelled who ſhould be maſter of theſe ſpots, that they might have named them as they pleaſed.

I CANNOT approve that notion; it was but the other day, ſays ſhe, you were deſcribing the moon, and called ſeveral places by the names of the moſt famous aſtronomers. I was pleaſed with the fancy; for ſince the princes have ſeized on the earth, it is fit the philoſophers (who are as proud as the beſt of them) ſhould reſerve the heavens for themſelves, without any competitors. O, anſwered I, trouble not yourſelf, the philoſophers make the beſt advantage of their territories, and if they part with the leaſt ſtar, it is upon very good terms; but the ſpots on the ſun are fallen to nothing, it is now diſcovered that they are not planets, but clouds, ſteams, or droſs, which riſes upon the ſun, ſometimes in a great quantity, ſometimes in a leſs; ſometimes they are dark, ſometimes clear, ſometimes they continue a great while, and ſometimes they diſappear as long. It ſeems the ſun is a liquid matter, ſome think of melted gold, which ſeems to boil over continually, and by the force of its motion, caſts the ſcum or droſs on its ſurface, where it is conſumed, and others riſe. Imagine then what ſtrange bodies theſe are, when ſome of them are as big as the earth: What a vaſt quantity muſt there be of this melted gold, and what muſt be the extent of this great ſea of light and fire which they call the ſun? Others ſay, the ſun appears through their teleſcopes full of mountains, which vomit fire continually, and are jointed together like millions of Ætnas. Yet there are thoſe who ſay theſe burning mountains are pure viſion, cauſed by a fault in the opticks; but what ſhall we credit, if we muſt diſtruſt our teleſcopes, to which we owe the knowledge of ſo many new objects? But let the ſun be what it will, it cannot be at all proper for habitation; and what pity that is, for how pleaſant would it be? You might then be at the centre of the univerſe, where you would ſee all the planets turn regularly about you; but now we are only poſſeſſed with extravagant fancies, becauſe we do not ſtand in the proper place; there is but one place in the world where the ſtudy or knowledge of the ſtars is eaſily obtained, and what pity it is there is nobody there. You forget yourſelf ſurely, ſays ſhe, were you in the ſun, you would ſee nothing, neither planets nor fixed ſtars; does not the ſun efface all? So that could there be any inhabitants there, they might juſtly think themſelves the only people in nature.

I OWN my miſtake, Madam; I was thinking of the ſituation of the ſun, and not of the effects of its light; I thank you for your correction; but muſt take the freedom to tell you that you are in an error, as well as myſelf; for were there inhabitants in the ſun, they would not ſee at all, either they could not bear the ſtrength of its light, or for want of a due diſtance, they could not receive it; ſo that things well conſidered, all the people there muſt be ſtone blind; which is another reaſon why the ſun cannot be inhabited; but let us purſue our voyage. We are now arrived at the centre, which is always the bottom, or loweſt place of what is round; if we go on, we muſt aſcend; then we ſhall find Mercury, Venus, the earth, the moon, all the planets we have already viſited; the next is Mars, who affords nothing curious that I know of; his day is not an hour longer than ours, but his year is twice as long; he is a little leſs than the earth, and the ſun ſeems not altogether ſo large and ſo bright to him, as it appears to us. But let us leave Mars, he is not worthy our ſtay: But what a pretty thing is Jupiter, with his four moons, or yeomen of the guard; they are four little planets which turn round him as our moon turns round us. But why, ſays the Marchioneſs, interrupting me, muſt there be planets to turn round other planets, that are no better than themſelves? I ſhould think it would be more regular and uniform, that all the planets, ſmall and great, without any diſtinction, ſhould have one and the ſame motion round the ſun.

Ah, Madam, ſays I, if you did but know what Deſcartes's whirlpools or vortexes were (whole name is terrible, but their idea pleaſant) you would not be of that opinion. Why, ſays ſhe, ſmiling, muſt my head turn round to comprehend them, or muſt I become a natural fool to underſtand the myſteries of philoſophy? Well, let the world ſay what it will, go on with your whirlpools. I will, ſays I, and you ſhall ſee the whirlpools are worthy of theſe tranſports: that then which we call a whirlpool, or vortex, is a maſs of matter, whoſe parts are ſeparated, or detached from one another, yet have all one uniform motion; and at the ſame time, every one is allowed, or has a particular motion of its own, provided it follows the general motion: Thus a vortex of wind, or whirlwind, is an infinity of little particles of air, which turn round all together, and involve whatever they meet with. You know the planets are born up by the celeſtial matter, which is very ſubtle and active; ſo that this great maſs or ocean of celeſtial matter, which flows as far as from the ſun to the fixed ſtars, turns round, and bears the planets alſo with it, making them all turn after the ſame manner round the ſun, who poſſeſſes the centre; but in a longer or ſhorter time, according as they are farther or nearer in diſtance to it: There is not any planet next the ſun, which does not turn, but he turns on himſelf, becauſe he is juſt in the middle of this celeſtial matter; and you muſt know, by the way, that were the earth in his place, it muſt turn on itſelf, as the ſun does. This is the great vortex, of which the ſun is lord; yet at the ſame time, the planets make little peculiar vortexes, in imitation of that of the ſun; each of them in turning round the ſun, does at the ſame time turn round itſelf, and makes a certain quantity of celeſtial matter turn round it likewiſe, which is always prepared to follow the motion which the planet gives it, provided it is not diverted from its general motion; this then is the particular vortex of the planet, which puſhes it as far as the ſtrength of its motion reaches:

And if by chance a leſſer planet falls into the vortex of a greater planet, it is immediately borne away by the greater, and is indiſpenſably forced to turn round, though at the ſame time, the great planet, the little planet, and the vortex which encloſes them, all turn round the ſun: It was thus at the beginning of the world, when we made the moon follow us, becauſe ſhe was within the reach of our vortex, and therefore wholly at our diſpoſal: Jupiter was ſtronger, or more fortunate than we, he had four little planets in his neighbourhood, and he brought them all four under his ſubjection; and no doubt, we, though a principal planet, had had the ſame fate, had we been within the ſphere of his activity; he is 90 times bigger than the earth, and would certainly have ſwallowed us into his vortex; we had then been no more than a moon in his family, but now we have one to wait on us; ſo that you ſee the advantage of ſituation often decides all our good fortune.

But pray, ſays ſhe, who can aſſure us we ſhall continue as we do now? If we ſhould be ſuch fools as to go near Jupiter, or he ſo ambitious as to approach us, what will become of us? For if (as you ſay) the celeſtial matter is continually under this great motion, it muſt needs agitate the planets irregularly; ſometimes drive them together, and ſometimes ſeparate them. Luck is all, ſays I, we may win as well as loſe; and who knows, but we might bring Mercury and Venus under our government; they are little planets, and cannot reſiſt us; but in this particular, Madam, we need neither hope, nor fear; for the planets keep within their own bounds, and are obliged, as the kings of China were formerly, not to undertake new conqueſts. Have you not ſeen when you put water and oil together, the oil ſwims a-top: and if to theſe two liquors you add a very little more, the oil bears it up, and it will not ſink to the water: Put an heavier liquor, of a juſt weight, and it will paſs through the oil, which is too weak to ſuſtain it, and ſink till it comes to the water, which is ſtrong enough to bear it up; ſo that in this liquid, compoſed of two liquors, which do not mingle, two bodies of an equal weight, will naturally aſſume two different places, the one will never aſcend; the other will never deſcend; if we ſtill put other liquors, which do not mingle, and throw other bodies on them, it will be the ſame thing: Fancy then that the celeſtial matter which fills this great vortex, has ſeveral reſting places, one by another, whoſe weight are different, like that of oil, water, and other liquors; the planets too are of a different weight, and conſequently every planet ſettles in that place which has a juſt ſtrength to ſuſtain and keep it equilibrate; ſo, you ſee, it is is impoſſible it ſhould ever go beyond.

I VERY well apprehend, ſays the Marchioneſs, that theſe weights keep their ſtations regularly. Would to God, our world were as well regulated, and every one among us knew their proper place. I am not now in any fear of being over-run by Jupiter; and ſince he let us alone in our vortex, with our moon, I do not envy him the four which he has. Did you envy him, replied I, you would do him wrong, for he has no more than he has occaſion for; at the diſtance he is from the ſun, his moons receive, and ſend him but a very weak light; it is true, that as he turns upon himſelf in 10 hours, his nights by conſequence, are but 5 hours long; ſo one would think there is no great occaſion for four moons, but there are other things to be conſidered. Here, under the poles they have 6 months day, and 6 months night, becauſe the poles are the two extremities of the earth, the fartheſt removed from thoſe places where the ſun is over them, in a perpendicular line. The moon ſeems to keep almoſt the ſame courſe as the ſun, and if the inhabitants of the pole ſee the ſun during one half of his courſe in the year, and during the other half do not ſee him at all; they ſee the moon likewiſe during one half of her courſe of a month; that is, ſhe appears to them 15 days, but they do not ſee her during the other half. Jupiter's year is as much as 12 of ours, ſo that there muſt be two oppoſite extremities in that planet, where their night and day are 6 years each. A night 6 years long is a little diſconſolate, and it is for that reaſon, I ſuppoſe, they have four moons; that which in regard to Jupiter, is uppermoſt, finiſhes its courſe about him in 17 days, the ſecond in 7, the third in 3 days and an half, and the fourth 42 hours; and though they are ſo unfortunate as to have 6 years night, yet their courſe being exactly divided into halves, they never paſs above 21 hours, wherein they do not ſee at leaſt the laſt moon, which is a great comfort in ſo tedious a darkneſs; ſo that be where you will, theſe four moons are ſometimes the prettieſt ſight imaginable; ſometimes they riſe all four together, and then ſeparate according to the inequality of their courſe; ſometimes they are all in their meridian, ranged one above another; ſometimes you ſee them at equal diſtances on the horizon; ſometimes when two riſe, the other two go down. O how ſhould I like to ſee their perpetual ſport of eclipſes; for there is not a day paſſes, but they eclipſe the ſun, or one another; and they are ſo accuſtomed to theſe eclipſes in that planet, that they are certainly objects of diverſion, and not of fear, as with us.

WELL, ſays the Marchioneſs, I hope you will people theſe four moons, though you ſay they are but little ſecondary planets, appointed to give light to another planet during its night. Do not doubt it, replied I, theſe planets are not a jot the worſe to be inhabited, for being forced to turn round another planet of greater conſequence. I would have then, ſays ſhe, the people of theſe four moons to be ſo many colonies under Jupiter's government; they ſhould, if it were poſſible, receive their laws and cuſtoms from him, and conſequently pay him a kind of homage, and not view his great planet without deference. Would it not be convenient too, ſays I, that they ſhould ſend deputies with addreſſes to him, to aſſure him of their fidelity; for he has certainly a more abſolute command over his moons, than we have over ours, though his power, after all, is but imaginary, and conſiſts chiefly in making them afraid;

for that moon, which is neareſt to him, ſees that he is 360 times bigger than our moon appears to us; for in truth, he is ſo much bigger than ſhe; he is alſo much nearer to them, than our moon is to us, which makes him appear the greater; ſo that this formidable planet hangs continually over their heads, at a very little diſtance: and if the Gauls were afraid heretofore that the heavens would fall on them, I think the inhabitants of that moon may well be apprehenſive that Jupiter will at ſome time or other overwhelm them. I fancy, ſays the lady, they are poſſeſſed with that fear, becauſe they are not concerned at eclipſes: Every one has their peculiar folly; we are afraid of an eclipſe, and they, that Jupiter will fall on their heads. It is very true, ſays I, the inventor of the third ſyſtem I told you of the other night, the famous Tycho-Brache, (one of the greateſt aſtronomers that ever lived) did not apprehend the leaſt danger from an eclipſe, when every body elſe was under the greateſt conſternation; but what apprehenſions do you think he entertained inſtead of them? This great man was ſo unaccountably ſuperſtitious, that if an hare did but croſs him, or an old woman bolt upon him at his firſt coming out, he inſtantly looked upon his journey to be ominous, ſhut himſelf up for that day, and would not be concerned in the leaſt buſineſs. It would be very unreaſonable, replied ſhe, after ſuch a man could not redeem himſelf from the fear of elipſes, without falling into ſome other whimſy as troubleſome, that the inhabitants of that moon of Jupiter, whereof we are talking, ſhould come off upon eaſier terms: But we will give them no quarter; they ſhall come under the general rule, and if they are free from one error, ſhall fall into another, to put them upon an equivalent: But as I do not trouble myſelf, becauſe I cannot gueſs what the next error may be, pray clear up one more difficulty to me, which has given me ſome pain for ſeveral minutes. Tell me, if the earth be ſo little in compariſon of Jupiter, whether his inhabitants do diſcover us? Indeed, I believe not, ſays I, for if we appear to him 90 times leſs than he appears to us, judge you if there be any poſſibility: Yet this we may reaſonably conjecture, that there are aſtronomers in Jupiter, who after they have made the moſt curious teleſcopes, and taken the cleareſt nights for their obſervations, may have diſcovered a little planet in the heavens, which they never ſaw before; if they publiſh their diſcovery, moſt people know not what they mean, or laugh at them for fools; nay, the philoſophers themſelves will not believe them, for fear of deſtroying their own opinions; yet ſome few may be a little curious, they continue their obſervations, diſcover the little planet again, and are now aſſured it is no viſion; then they conclude it has a motion round the ſun, and after a thouſand obſervations, find that it compleats this motion in a year; and at laſt (thanks to the learned) they know in Jupiter that our earth is a world; every body runs to ſee it at the end of a teleſcope, though it appears ſo ſmall, as to be ſcarcely diſcernible.

It muſt be pleaſant, ſays ſhe, to ſee the aſtronomers of both planets levelling their tubes at one another, and mutually aſking, What world is that? What people inhabit it? Not ſo faſt neither, replied I, for though they may from Jupiter diſcover our earth, yet they may not know us; that is, they do not in the leaſt ſuſpect it is inhabited; and ſhould any one there chance to have ſuch a fancy, he might be ſufficiently ridiculed, if not proſecuted for it; for my part, I believe they have work enough to make diſcoveries on their own planet, not to trouble their heads with ours. It is ſo large, that if they have any ſuch thing as navigation, their Chriſtopher Columbus could never want employment; why, I warrant you, they have never yet diſcovered the hundredth part of their planet. But if Mercury is ſo ſmall, they are all (as it were) near neighbours, and it is but taking a turn to go round that planet. But if we do not appear to them in Jupiter, they cannot certainly diſcover Venus and Mercury, which are much leſs than the earth, and at a greater diſtance; but in lieu of it, they ſee Mars, their own four moons, and Saturn with his; this I think is work enough for their aſtronomers, and Nature has been ſo kind as to conceal from them the reſt of the univerſe.

Do you think it a favour then, ſays ſhe? Yes, certainly, replied I, for their are 16 planets in this great vortex: Nature ſaves us the trouble of ſtudying the motions of them all, and ſhews us but ſeven which I think is very obliging, though we know not how to value the kindneſs, for we have recovered the other nine which were hid from us, and ſo render the ſcience of aſtronomy much more difficult than Nature deſigned it.

If there are 16 planets, ſays the Marchioneſs, Saturn muſt have 5 moons. It is very true, replied I, and 2 of theſe 5 are but lately diſcovered; but there is ſomewhat that is more remarkable, ſince his year makes 30 of ours, and there are conſequently in him ſome countries, where their night is 15 years long; what can you imagine Nature has invented to give light, during a night ſo dreadful? Why, ſhe has not only given Saturn five moons, but ſhe has encompaſſed him round with a great circle or ring; this being placed beyond the reach of the ſhadow, which the body of that planet caſts, reflects the light of the ſun continually on thoſe places where they cannot ſee the ſun at all.

I protest, ſays the Marchioneſs, this is very ſurpriſing, and yet all is contrived in ſuch great order, that it is impoſſible not to think, but Nature took time to conſider the neceſſities of all animate beings, and that the diſpoſing of theſe moons was not a work of chance; for they are only divided among thoſe plants which are fartheſt diſtant from the ſun, the earth, Jupiter, and Saturn; indeed it was not worth while to give any to Mercury or Venus, they have too much light already; and they account their nights (as ſhort as they are) a greater bleſſing than their day. But pray, why has not Mars a moon too? It ſeems he has none, though he is much farther than the earth from the ſun. It is very true, ſays I, no doubt but he has other helps, though we do not know them. You have ſeen the Phoſphorus, both liquid and dry, how it receives and imbibes the rays of the ſun, and what a great light it will caſt in a dark place; perhaps Mars has many great high rocks which are ſo many natural Phoſphoruſes, which in the day-time take in a certain proviſion of light, and return it again at night; what think you, Madam, is it not very pleaſant, when the ſun is down, to ſee thoſe lighted rocks, like ſo many glorious illuminations, made without any art, and which can do no manner of hurt by their heat? Beſides, there is a ſpecies of birds in America, which reflect ſuch a light, that you may read by it in the darkeſt night; and who knows but Mars may have great flocks of theſe birds, that as ſoon as it is night, diſperſe themſelves into all parts, and ſpread from their wings a new day?

I AM not at all contented, ſays ſhe, either with your rocks, or your birds; it is a pretty fancy indeed, but it is a ſign that there ſhould be moons in Mars, ſince Nature has given ſo many to Saturn and Jupiter, and if all the other worlds that are diſtant from the ſun have moons, why ſhould Mars only be excepted? Ah, Madam, ſays I, when you are a little more dipped in philoſophy, you will find exceptions in the very beſt ſyſtem; there are always ſome things that agree extremely well, but then there are others which do not accord at all, thoſe you muſt leave as you found them, if ever you intend to make an end:

We will do ſo by Mars, if you pleaſe, and ſay no more of him, but to return to Saturn. What do you think of this great ring, in the form of a ſemicircle, that reaches from one end of the horizon to the other, which reflecting the light of the ſun, performs the office of a continual moon? And muſt we not inhabit this ring too, ſays ſhe, ſmiling? I confeſs, ſays I, in the humour I am in, I could almoſt ſend colonies every where; and yet I cannot well plant any there, it ſeems ſo irregular an habitation; but for the five little moons, they cannot chuſe but be inhabited; though ſome think this ring is a circle of moons, which follow cloſe to one another, and have an equal motion; and that the five little moons fell out of this circle; how many worlds are there then in the vortex of Saturn? But let it be how it will, the people in Saturn live very miſerably: It is true, this ring gives light to them, but it muſt be a very poor one, when the ſun ſeems to them but a little pale ſtar, whoſe light and heat cannot but be very weak at ſo great a diſtance; they ſay Greenland is a perfect bagnio, in compariſon of this planet, and that they would expire with heat in our coldeſt countries.

You give me, ſays ſhe, ſuch an idea of Saturn, it makes me ſhake with cold, and that of Mercury, puts me into a fever. It cannot be otherwiſe, replied I, for the two worlds, which are the extremities of this great vortex, muſt be oppoſite in all things. They muſt then, ſays ſhe, be very wiſe in return, for you told me they were all fools in Mercury. If they are not ſo wiſe, ſays I, yet they have all the appearances of being very flegmatic: They are people that know not what it is to laugh, they take a day's time to anſwer the leaſt queſtion you can aſk them; and are ſo very grave, that were Cato living among them, they would think him a Merry-Andrew.

It is very odd to conſider, ſays ſhe, that the inhabitants of Mercury are all life, and the inhabitants of Saturn quite contrary; but among us, ſome are briſk, and ſome are dull; it is, I ſuppoſe, becauſe our earth is placed in the middle of the other worlds, and ſo we participate of both extremes, there is no fixed or determinate character; ſome are mad like the inhabitants of Mercury, others like thoſe of Saturn; we are a mixture of the ſeveral kinds which are found in the reſt of the planets. Why, ſays I, do not you approve of the idea? Methinks it is pleaſant to be compoſed of ſuch a fantaſtical aſſembly tho' one would think we were collected out of different worlds; we need not travel abroad when we ſee all other worlds in epitome at home.

I am ſure, ſays the Marchioneſs, we have one great convenience in the ſituation of our world; it is not ſo hot as Mercury and Venus, nor ſo cold as Jupiter or Saturn; and our country is ſo temperately placed, that we have no exceſs either of heat or cold. I have heard of a philoſopher, who gave thanks to Nature that he was born a man, and not a beaſt, a Greek, and not a Barbarian; and for my part, I render thanks that I am ſeated in the mildeſt planet of the univerſe, and in one of the moſt temperate regions of that planet. You have more reaſon, ſays I, to give thanks that you are young, and not old; that you are young and handſome, not young and homely; that you are young, handſome, and a French woman, and not young, handſome, and an Italian; theſe are more proper ſubjects for your thanks, than the ſituation of your vortex, or the temperature of your country.

PRAY, Sir, ſays ſhe, let me give thanks for all things, to the very vortex in which I am planted: Our proportion of happineſs is ſo very ſmall, that we ſhould not loſe any, but improve continually what we have, and be grateful for every thing, though ever ſo common or inconſiderable. If nothing but exquiſite pleaſure will ſerve us, we muſt wait a long time, and be ſure to pay too dear for it at laſt. I wiſh, ſays I, that philoſophy was the pleaſure you propoſe, that when you think of vortexes, you would not forget an humble ſervant of your ladyſhip's. I eſteem it a pleaſure, anſwered the lady, while it diverts me with ſomething new, but no longer. I will engage for it till to-morrow, replied I, for the fixed ſtars are ſuperior to whatever you have yet ſeen.

The Fifth Evening.

Shewing that the fixed ſtars are ſo many ſuns, every one of which gives light to a world.

THE Marchioneſs was very impatient to know what would become of the fixed ſtars; are they peopled, ſays ſhe, as the planets are, or are they not inhabited at all, or in ſhort, what ſhall we do with them? You may ſoon gueſs, ſays I, the fixed ſtars cannot be leſs diſtant from the earth, than fifty millions of leagues; nay, if you anger an aſtronomer, he will ſet them farther. The diſtance from the ſun to the fartheſt planet is nothing in compariſon of the diſtance from the ſun, or from the earth to the fixed ſtars, it is almoſt beyond arithmetic. You ſee their light is bright and ſhining, and did they receive it from the ſun, it muſt needs be very weak, after a paſſage of fifty millions of leagues; then judge how much it is waſted by reflection, for it comes back again as far to us; ſo that forwards and backwards, here are an hundred millions of leagues for it to paſs, and it is impoſſible it ſhould be ſo clear and ſtrong as the light of a fixed ſtar, which cannot but proceed from itſelf; ſo that in a word, all the fixed ſtars are luminous bodies in themſelves, and ſo many ſuns.

I PERCEIVE, ſays the Marchioneſs, where you would carry me; you are going to tell me, that if the fixed ſtars are ſo many ſuns, and our ſun the centre of a vortex which turns round him, why may not every fixed ſtar be the centre of a vortex that turns round the fixed ſtar? Our ſun enlightens the planets; why may not every fixed ſtar have planets to which they give light? You have ſaid it, replied I, and I will not contradict you.

BUT you have made the univerſe ſo large, ſays ſhe, that I know not where I am, or what will become of me; what, is it all to be divided into vortexes confuſedly, one among another? Is every ſtar the centre of a vortex, as big as ours? Is that vaſt ſpace which comprehends our ſun and planets, but an inconſiderable part of the univerſe? And are there as many ſuch ſpaces as there are fixed ſtars? I proteſt it is dreadful, the idea confounds and overwhelms me. And for my part, replied I, it gives me ſatisfaction; when the heavens were a little blue arch, ſtuck with ſtars, methought the univerſe was too ſtrait and cloſe, I was always ſtifled for want of air; but now it is enlarged in heighth and breadth, and more than a thouſand vortexes taken in; I begin to breathe with more freedom, and think the univerſe to be incomparably more magnificent than it was before. Nature has ſpared no coſt, even to profuſeneſs, and nothing can be ſo glorious, as to ſee ſuch a prodigious number of vortexes, whoſe ſeveral centres are poſſeſſed by a particular ſun, which makes the very planets turn round it. The inhabitants of a planet of one of theſe innumerable vortexes behold on all ſides theſe luminous centres of the vortex, with which they are encompaſſed; but perhaps they do not ſee the planets, who, receiving but a faint light from the ſun, cannot ſend it beyond their own world.

YOU preſent me with a proſpect of ſo vaſt a length, that no eye can reach to the end of it: I plainly ſee the inhabitants of the earth, and you have made me diſcover thoſe who dwell in the moon, and in other planets of the vortex; theſe inhabitants indeed I can perceive pretty plainly, but I do not ſee them ſo clearly as thoſe of the earth: After theſe, we come to the inhabitants of the planets which are in the other vortexes, but they are ſunk into ſo great a depth, that though I do all I can to ſee them, yet I muſt confeſs I can hardly perceive them: by the expreſſion you make uſe of in mentioning them, they ſeem to be almoſt annihilated; you ought then to call them the inhabitants of one of theſe innumerable vortexes: We ourſelves, for whom the ſame expreſſion ſerves, muſt confeſs, that we ſcarce know where we are, in the midſt of ſo many worlds; for my own part, I begin to ſee the earth ſo minutely ſmall, that I believe, from henceforward, I ſhall never be concerned at all for any thing; that we ſo eagerly deſire to make ourſelves great, that we are always deſigning, always troubling and harraſſing ourſelves, is certainly becauſe we are ignorant what theſe vortexes are; but now I hope my new lights will in part juſtify my lazineſs, and when any one reproaches me with my indolence, I will anſwer, Ah, did you but know what the fixed ſtars are? It was not fit, ſays I, that Alexander ſhould know what they were, for a certain author [Huygens] who maintains that the moon is inhabited, very gravely tells us, that Ariſtotle (from whom no truth could be long concealed) muſt neceſſarily be of an opinion, backed with ſo much reaſon; but yet he never durſt acquaint Alexander with the ſecret, leſt he ſhould run mad with deſpair, when he knew there was another world which he could not conquer. With much more reaſon then was this myſtery of vortexes and fixed ſtars kept ſecret in Alexander's time, for though they had been known in thoſe days, yet it had been but an ill way of making one's court, to have ſaid any thing of them to that ambitious prince; for my part, I that know them, am not a little troubled to find myſelf not a jot the wiſer for all the knowledge I have of them; the moſt they do, according to your way of reaſoning, is but to cure people of their ambition, and their unquiet reſtleſs humour, which are diſeaſes I am not at all troubled with; I confeſs I am guilty of ſo much weekneſs, as to be in love with what is beautiful; this is my diſtemper, and I am confident the vortexes can never cure it: What if the other worlds render ours ſo very little? They cannot ſpoil the eyes, or a pretty mouth, their value is ſtill the ſame, in ſpite of all the worlds than can poſſibly exiſt.

THIS love, replied the Marchioneſs, laughing, is a ſtrange thing; let the world go how it will, it is never in danger; there is no ſyſtem can do it any harm But, tell me freely, is your ſyſtem true? Pray do not conceal any thing from me; I will keep your ſecret very faithfully; it ſeems to have for its foundation but a ſlight probability, which is, that if a fixed ſtar be itſelf a luminous body, like the ſun, then by conſequence, it muſt, as the ſun is, be the centre and ſoul of a world; and have its planets turning round about it: But is there an abſolute neceſſity it muſt be ſo? Hear me, Madam, ſays I, ſince we are in the humour of mingling light gallantries with a ſerious diſcourſe, I muſt tell you, that in love and the mathematics, people reaſon much alike: Allow ever ſo little to a lover, yet preſently after you muſt at laſt go a great way. In like manner, grant but a mathematician one minute principle, he immediately draws a conſequence from it to which you muſt neceſſarily aſſent; and from this conſequence another, till he leads you ſo far (whether you will or no) that you have much ado to believe him. Theſe two ſorts of people, lovers and mathematicians, will always take more than you give them. You grant, that when two things are like one another in all viſible reſpects, it is poſſible they may be like one another in thoſe reſpects which are not viſible, if you have not ſome good reaſon to believe otherwiſe: Now this way of arguing have I made uſe of. The moon, ſays I, is inhabited, becauſe ſhe is like the earth; and the other planets are inhabited, becauſe they are like the moon: I find the fixed ſtars to be like our ſun, therefore I attribute to them what is proper to him. You are now going too far to be able to retreat, therefore you muſt go forward with a good grace. But, ſays the lady, if you build upon this reſemblance, or likeneſs, which is between our ſun and the fixed ſtars, then to the people of another great vortex, our ſun muſt appear no bigger than a ſmall fixed ſtar, and can be ſeen only when it is night with them. Without doubt, Madam, ſays I, it muſt be ſo: Our ſun is much nearer to us, than the ſuns of other vortexes, and therefore its light makes a much greater impreſſion on our eyes than theirs do: We ſee nothing but the light of our own ſun; and when we ſee him, it darkens and hinders us from ſeeing any other light; but in another great vortex, there is another ſun, which rules and governs; and, in his turn extinguiſhes the light of our ſun, which is never ſeen there but in the night, with the reſt of the other ſuns; that is, the fixed ſtars; with them our ſun is faſtened to the great arched roof of heaven, where it makes a part of ſome bear or bull: For the planets which turn round about it, (our earth for example) as they are not ſeen at ſo vaſt diſtance, ſo no body will ſo much as dream of them: All the ſuns that are day-ſuns in their own vortexes, but night ſuns in other vortexes: In his own world or ſphere, every ſun is ſingle, and there is but one to be ſeen; but every where elſe they ſerve only to make a number. May not theſe worlds, replied ſhe, notwithſtanding this great reſemblance between them, differ in a thouſand other things; for though they may be ſomewhat alike in one particular they may greatly differ in others.

It is certainly true, ſays I; but the difficulty is to know wherein they differ. One vortex has many planets that turn round about its ſun, another vortex has but a few: In one vortex, there are inferior or leſs planets, which turn about thoſe that are greater; in another, perhaps, there are no inferior planets; here, all the planets are got round about their ſun, in form of a little ſquadron; beyond which is a large void ſpace, which reaches to the neighbouring vortexes: In another place, the planets take their courſe towards the outſide of their vortex, and leave the middle void. There may be vortexes alſo quite void, without any planets at all; others may have their ſun not exactly in their centre; and that ſun may ſo move, as to carry its planets along with it: Some may have planets, which in regard of their ſun, aſcend and deſcend, according to the change of their equilibration, which keeps them ſuſpended. In ſhort, what variery can we wiſh for? But, I think, I have ſaid enough for a man that was never out of his own vortex.

It is not ſo much, replied the Marchioneſs, conſidering what a multitude of worlds there are; what you have ſaid is ſufficient for five or ſix, and from hence I ſee thouſands.

WHAT would you ſay, Madam, if I ſhould tell you, there are many more fixed ſtars than thoſe you ſee? And that an infinite number are diſcovered with glaſſes, which are not perceptible to the naked eye, and that in one ſingle conſtellation, where perhaps we count 12 or 15, there are as many more to be found as uſually appear in the whole hemiſphere.

I SUBMIT, ſays ſhe, and beg your pardon: You quite confound me with worlds and vortexes. O, Madam, I have a great deal more to tell you, replied I, you ſee that whiteneſs in the ſky, which ſome call the milky-way; can you imagine what that is? Why, it is nothing but an infinity of ſmall ſtars, not to be ſeen by our eyes, becauſe they are ſo very little; and they are ſown ſo thick, one by another, that they ſeem to be one continued whiteneſs: I wiſh you had a glaſs, to ſee this ant-hill of ſtars, and this cluſter of worlds, if may ſo call them: They are in ſome ſort like the Maldivy iſlands: Thoſe twelve thouſand banks of ſand, ſeparated only by narrow channels of the ſea, which a man may as eaſily leap over as a ditch: So near together are the vortexes of the milky-way, that I preſume, the people in one world may talk, and ſhake hands with thoſe of another; at leaſt I believe the birds of one world may eaſily fly into the other; and that pigeons may be trained up to carry letters, as they do in the Levant. Theſe little worlds are excepted out of that general rule, by which one ſun in his own vortex, as ſoon as he appears, effaces the light of all other foreign ſuns: If you were in one of theſe little vortexes of the milky-way, milky-way, your ſun would not be much nearer to you, and conſequently, would not make any much more ſenſible impreſſion on your eyes, than a hundred thouſand other ſuns of the neighbouring vortexes: You would then ſee your heaven ſhine bright with an infinite number of fire, cloſe to one another, and but a little diſtant from you; ſo that tho' you ſhould loſe the light of your own particular ſun, yet there would ſtill remain viſible ſuns ſufficient beſide your own, to make your night as light as day, at leaſt the difference would hardly be perceived: for the truth is, you would never have any night at all. The inhabitants of theſe worlds, accuſtomed to perpetual brightneſs, would be ſtrangely aſtoniſhed, if they ſhould be told that there are a miſerable ſort of people, who, were they live, have very dark nights, and when it is day with them, they never ſee more than one ſun; certainly they would think Nature had very little kindneſs for us, and would tremble with horror to think what a ſad condition we are in.

I DO not aſk you, ſays the Marchioneſs, whether in thoſe worlds of the milky-way there are any moons; I ſee they would be of no uſe to thoſe principal planets which have no night, and move in ſpaces too ſtrait and narrow to cumber themſelves with the baggage of inferior planets: Yet pray take notice, that by your liberal multiplication of worlds, you have ſtarted an objection not eaſily anſwered: The vortexes whoſe ſuns we ſee, touch the vortex in which we are; and if it be true, that vortexes are round, how then can ſo many bowls or globes all touch a ſingle one ? I would fain know how this may be done, but cannot reconcile to it myſelf.

Madam, ſays I, you ſhew a great deal of wit in raiſing this doubt, and likewiſe in not being able to reſolve it, for in itſelf, the thing ſeems extremely difficult; and, as you ſtate the queſtion, no anſwer can be given to it; and he muſt be a fool, who goes about to find anſwers to objections which are unanſwerable. If our vortex had the form of a dye, it would have ſix ſquares, or flat ſurfaces, and would be far from being round; and upon every one of theſe ſquares might be placed a vortex of the ſame figure; but if inſtead of theſe 6 ſquares it has 20, 50, or 1000; then might a 1000 vortexes be placed upon it, one upon every flat; and, you know very well, that the more flat faces any body has on its outſide, the nearer it approaches to roundneſs, juſt as a diamond cut faceways on every ſide, if the faces be very many and little, it will look as round as a pearl of the ſame bigneſs: It is in this manner, that the vortexes are round; they have an infinite number of faces on their outſide, and every one of them has upon it another vortex; theſe faces are not all equal and alike; but here, ſome are greater, and there ſome leſs: The leaſt faces of our vortex, for example, anſwer to the milky-way, and ſuſtain all thoſe little worlds. When two vortexes are ſupported by the two next flats on which they ſtand, if they leave beneath any void ſpaces between them, as it muſt often happen, Nature, who is an excellent houſewife, and will not ſuffer any thing to be uſeleſs, preſently fills up this void ſpace with a ſmall vortex or two, perhaps with a 1000, which never incommode the others, and become 1, 2, or 1000 worlds more; ſo that there may be more worlds than our vortex has flat ſurfaces to bear them. I will lay a wager, that tho' theſe little worlds were made only to be thrown into the corners of the univerſe, which otherwiſe would have been void and uſeleſs; and though they are unknown to other worlds which they touch, yet they are well ſatisfied with being what they are: Theſe are the little worlds, whoſe ſuns are not to be diſcovered but with a teleſcope, and whoſe number is prodigious: To conclude, all the vortexes are joined to one another in ſo admirable a manner, that every one turns round about his own ſun, without changing place; every one has ſuch a turn as is moſt eaſy and agreeable to its own ſituation: They take hold of one another, like the wheels of a watch, and mutually help each other's motion: And yet it is certain that they act contrary to one another. Every world, as ſome ſay, is like a foot-ball, made of a bladder, covered with leather, which ſometimes ſwells of its own accord, and would extend itſelf, if it were not prevented. But this ſwelling world being preſſed by the next to it, returns to its firſt figure; then ſwells again, and is again depreſſed, and ſome affirm, that the reaſon why the fixed ſtars give a twinkling and trembling light, and ſometimes ſeem not to ſhine at all, is becauſe their vortexes perpetually puſh and preſs our vortex, and ours again continually repulſes theirs.

I AM in love with theſe fancies, ſays Madam, and pleaſed with the foot-balls, which ſwell every moment, and ſink again; and with theſe worlds, which are continually ſtriving and puſhing one another: But above all, I am pleaſed to ſee how this juſtling keeps up the trade of light, which is certainly the only correſpondence that is between them.

No, no, Madam, ſays I, light is not their ſole commerce; the neighbouring worlds ſometimes pay viſits to us, and that in a very magnificent and ſplendid manner: Comets arrive from thence, adorned with bright ſhining hair, venerable beards, and majeſtic tails; theſe, ſays the Marchioneſs, are ambaſſadors, whoſe viſits may be well ſpared, ſince they ſerve only to fright us. They ſcare only children, ſays I, with their extraordinary train; but, indeed, the number of ſuch children is now a-days very great. Comets are nothing but planets which belong to a neighbouring vortex, they move towards the outſide of it; but perhaps this vortex being differently preſſed by thoſe vortexes which encompaſs it above, it is rounder than below, and the loweſt part is ſtill towards us. Theſe planets which have begun to move in a circle above, are not aware, that below their vortex will fail them, becauſe it is, as it were, broken. Therefore, to continue the circular motion, it is neceſſary, that they enter into another vortex, which we will ſuppoſe is ours, and that they cut through the out-ſides of it. They appear to us very high, and are much higher than Saturn; and according to our ſyſtem, it is abſolutely neceſſary they ſhould be ſo high, for reaſons that do not ſignify any thing to our preſent ſubject. From Saturn downwards to the other ſide of our vortex, there is a large void ſpace without any planets. Our adverſaries often aſk us, to what purpoſe this void ſpace ſerves? But let them not trouble themſelves any more, I have found a uſe for it. It is the apartment of thoſe ſtrange planets, which come into our world.

I UNDERSTAND you, ſays ſhe, we do not ſuffer them to come into the heart of our vortex, among our own planets, but we receive them as the Grand Signior does the ambaſſadors who are ſent to him; he will not ſhew them ſo much reſpect as to let them reſide within the walls of Conſtantinople, but conſigns them one of the ſuburbs of the city: Madam, ſays I, we and the Ottomans agree likewiſe in this, that as they receive ambaſſadors, but never ſend any, ſo we never ſend any of our planets into the worlds that are next us.

BY this, ſays ſhe, it appears that we are very proud; however, I do not yet very well know what I am to believe. Theſe foreign planets with their tails and their beards have a terrible countenance, it may be they are ſent to affront us; but ours that are of another make, if they ſhould get into other worlds, are not ſo proper to make people afraid.

NEITHER their beards, nor tails, Madam, ſays I, are real; only phænomena, mere appearances. Theſe foreign planets differ in nothing from ours;

but entering into our vortex, they ſeem to us to have tails, or beards, by a certain ſort of illumination which they receive from the ſun, and which has not been yet well explained. But it is certain, that it is but a kind of illumination, and when I am able I will tell you how it is done. I wiſh then, ſays ſhe, that our Saturn would go take a tail and a beard in another vortex, and fright all the inhabitants of it. Then I would have him come back again, leaving his terrible accoutrements behind him, and taking his uſual place amongſt our other planets, fall to his ordinary buſineſs. It is better for him, ſays I, not to go out of our vortex. I have told you how rude and violent the ſhock is, when two vortexes juſtle one another, a poor planet muſt needs be terribly ſhaken, and its inhabitants in no better condition. We think ourſelves very unhappy when a comet appears, but it is the comet which is in an ill caſe. I do not believe that, ſays ſhe, it brings all its inhabitants with it in very good health; there can be nothing ſo diverting as to change vortexes. We that never go out of our own ſphere lead but a dull life; if the inhabitant of a comet had but the wit to foreſee the time when they are to come into our world, they who had already made the voyage could tell their neighbour beforehand what they would ſee, and could inform them, that they would diſcover a planet with a great ring about it, meaning our Saturn: they would alſo ſay, you ſhall ſee another planet, which has four little ones to wait on it; and perhaps ſome of them, reſolving to obſerve the very moment of their entrance into our world, would preſently cry out, A new ſun, a new ſun, as ſailors uſe to cry, Land, land.

You have no reaſon then, ſays I, to pity the inhabitants of a comet, yet I ſuppoſe you will think their condition lamentable, who inhabit a vortex whoſe ſun comes in time to be quite extinguiſhed, and conſequently who live in eternal night. How, cried the Marchioneſs, can ſuns be extinguiſhed? Yes, without doubt, ſays I for people ſome thouſand years ago ſaw fixed ſtars in the ſky, which are now no more to be ſeen: Theſe were the ſuns which have loſt their light, and certainly there muſt be a ſtrange deſolation in their vortexes and a general mortality over all the planets, for what can people do without a ſun? This is a diſmal fancy, ſays the lady, I would not, if I could help it let it come into my head. I will tell you, if you pleaſe, replied I, what is the opinion of learned aſtronomers as to this particular: They think that the fixed ſtars which have diſappeared are not quite extinguiſhed, but that they are half ſuns, that is, they have one half dark, and the other half light, and turning round upon their own axis or centre, they ſometimes ſhew us their light ſide, and afterwards turning to us their dark one, we ſee them no more. To oblige you, Madam, I will be of this opinion, becauſe it is not ſo harſh as the other, tho' I cannot make it good but in relation to ſome certain ſtars, becauſe, as Huygens has lately obſerved, thoſe ſtars have their regulated times of appearing, and diſappearing, otherwiſe there could be no ſuch thing as half ſuns. But what ſhall we ſay of ſtars, which totally diſappear, and never ſhew themſelves again after they have finiſhed their courſe of turning round upon their own axis? You are too juſt, Madam, to oblige me to believe that ſtars are half ſuns. However, I will try once more what I can do in favour of your opinion: The ſuns are not extinct, they are only ſunk ſo low into the immenſe depth of heaven, that we cannot poſſibly ſee them; in this caſe, the vortex follows his ſun, and all is well again. It is true, that the greateſt part of the fixed ſtars have not this motion, by which they remove themſelves ſo far from us, becauſe at other times they might return again nearer us, and we ſhould ſee them ſometimes bigger, and ſometimes leſs, which never happens. But we will ſuppoſe that none but the little, light, and moſt active vortexes, which ſlip between the others, make certain voyages, after which they return again, while the main body of vortexes remain unmoved. It is likewiſe very ſtrange that ſome fixed ſtars ſhew themſelves to us, and take up a great deal of time in appearing and diſappearing, and at laſt, totally and entirely diſappear. Half ſuns would appear again at their fixed and regulated time. But ſuns, which ſhould be ſunk low into the depths of heaven, would diſappear but once, and not appear again for a vaſt ſpace of time. Now, Madam, declare your opinion boldly: Muſt not theſe ſtars, of neceſſity, be ſuns, which are ſo much darkened, as not to be viſible to us, yet afterwards ſhine again, and at laſt are wholly extinct? How can a ſun, ſays the Marchioneſs, be darkened and quite extinguiſhed, when it is in its own nature a fountain of light? It may be done, Madam, ſays I, with all the eaſe in the world, if Deſcartes' opinion be true, that our ſun has ſpots; now whether theſe ſpots be ſcum, or thick miſts, or what you pleaſe, they may thicken and unite, till at laſt they cover the ſun with a cruſt which daily grows thicker, and then farewell ſun. We have hitherto eſcaped pretty well; but it is reported, that the ſun for ſome whole years together has looked very pale; for example, the year after Cæſar's death; it was this cruſt that then began to grow, but the force of the ſun broke thro', and it was diſſipated; had it continued, we had been all a loſt people. You make me tremble, replied Madam, and now I know the fatal conſequences of the ſun's paleneſs, I believe, inſtead of going every morning to the glaſs, to ſee how I look myſelf, I ſhall caſt my eyes up to heaven, to ſee whether or no the ſun looks pale. O! lady, ſays I, there is a great deal of time required to ruin a world. I grant it, ſays ſhe, yet it is but time that is required. I confeſs it, Madam; all this immenſe maſs of matter, which compoſes the univerſe, is in perpetual motion, no part of it excepted; and ſince every part is moved, you may be ſure that changes muſt happen ſooner or later: but ſtill in times proportioned to the effect. The ancients were merry gentlemen, to imagine that the celeſtial bodies were in their own nature unchangeable, becauſe they obſerved no alteration in them; but they did not live long enough to confirm their opinion by their own experience: they were boys in compariſon of us. Give me leave, Madam, to explain myſelf by an allegory: If roſes, which laſt but a day, a day, could write hiſtories, and leave memoirs one to another, and if the firſt roſe ſhould draw an exact picture of his gardener, and after 15,000 roſe-ages, it ſhould be left to other roſes, and ſo on ſtill to thoſe that ſhould ſucceed, without any change in it; ſhould the roſes hereupon ſay, We have ſeen every day the ſame gardener, and in the memory of roſes, none ever ſaw any gardener but this; he is ſtill the ſame he was, and therefore certainly he will not die as we do, for there is no change at all in him. Would not theſe roſes, Madam, talk very fooliſhly? And yet there would be more reaſon in their diſcourſe, than there was in what the ancients ſaid concerning celeſtial bodies; and though even to this very day there ſhould appear no viſible change in the heavens, and the matter of which they are made ſhould have all the ſigns of an eternal duration, without any change; yet I would not believe them unchangeable, till I had the experience of many more ages. Ought we, whoſe lives are but a ſpan long, to make our continuance the menſurate duration of any other being? It is not ſo eaſy a matter to be eternal: To have laſted many ages of men, one after another, is no ſign of immortality. Truly, ſays the Marchioneſs, I find theſe worlds are far from being able to pretend to it; I will not do them ſo much honour, as to compare them to the gardener, who lived ſo much longer than the roſes: I begin to think them like the roſes themſelves, which blow one day, and die the next: For now I underſtand, that if old ſtars diſappear, new ones will come in their room, becauſe every ſpecies muſt preſerve itſelf. No ſpecies, Madam, ſays I, can totally periſh; ſome perhaps will tell you, that ſuch new ſtars are ſuns, which return to our ſight again, after they have been a long time hid from us, in the profundity of heaven: Others may tell you, they are ſuns cleared from that thick cruſt, which once covered them: If I ſhould think all this poſſible, yet I likewiſe believe that the univerſe may be framed in ſuch a manner, that from time to time it may produce new ſuns; why may not that matter which is proper to make a ſun be diſperſed here and there, and gather itſelf again at long run, into one certain place, and lay the foundation of a new world? I am very much inclined to believe ſuch new productions, becauſe they ſuit with that glorious and admirable idea which I have of the works of nature. Can we think that all-wiſe Nature knows no more than the ſecret of making herbs and plants live and die by a continual revolution? I am verily perſuaded, and are not you ſo too, Madam, that Nature, without much coſt or pains, can put the ſame ſecret in practice upon the worlds? I now find, ſays ſhe, the worlds, the heavens and celeſtial bodies ſo ſubject to change, that I am come to myſelf again. To recover ourſelves the better, replied I, let us ſay no more of theſe matters. We are arrived at the very roof and top of all the heavens; and to tell you whether there be any ſtars beyond it, you muſt have a more able aſtronomer than I am; you may place worlds there, or no worlds, as you pleaſe: It is the philoſopher's empire to deſcribe thoſe vaſt inviſible countries, which are, and are not, or are ſuch as he pleaſes to make them: It is enough for me to have carried your mind as far as you can ſee with your eyes.

WELL now, ſays the Marchioneſs, I have the whole ſyſtem of the univerſe in my head; how learned am I become! Indeed, Madam, ſays I, you are pretty knowing, and with this advantage, either of believing, or diſbelieving any thing I have ſaid; all the recompence I deſire for the pains I have taken, is, that you would never look upon the ſun, the heavens, or the ſtars, without thinking on me.

* * *

The Sixth Evening.

New obſervations concerning the preceding ones. And ſome farther diſcoveries made in the heavens.

IT is ſo long ſince the Marchioneſs of G*** and I had any diſcourſe concerning the planetary worlds, that we began to queſtion whether we had ever any on that ſubject. When I went one day to viſit her, I came in juſt as two very polite gentlemen had taken their leaves of her. Well, ſays Madam, the very moment ſhe perceived me, you ſee who have honoured me with a viſit; and, I proteſt, it has given me ſome room to ſuſpect that it has been in your power to impoſe upon my judgment. I ſhould be very proud, replied I, if I could flatter myſelf with ſuch a power, becauſe I look upon it to be the hardeſt taſk any one could attempt. As hard as it is, ſays ſhe, I am afraid you have done it. I do not know how it came about, but the converſation turned upon the plurality of worlds with my two friends who are juſt gone: I am not certain, but they might introduce the diſcourſe with a malicious deſign. I made no ſcruple to tell them directly, that all the planets were inhabited; one of them replied, he was very well ſatisfied I did not believe a word of it; and I, with all the ſimplicity imaginable, maintained, that it was my real opinion; he ſtill looked upon it as a piece of diſſimulation, deſigned to divert the company: And I thought, what made him ſo poſitive that I did not believe my own ſentiments, was, that he had too high an opinion of me to conceive that I could entertain ſo extravagant a notion As for the other gentleman, who had not altogether that eſteem for me, he took me at my word. For God's ſake, why did you put a thing in my head, which people that value me cannot think I maintain ſeriouſly? Nay, Madam, ſays I, but why would you attempt to maintain any ſerious poſition among a ſet of people, who, I am ſure never entered into a way of reaſoning which had the leaſt caſt of ſeriouſneſs? We ſhould not affront the inhabitants of the planets ſo highly; but content ourſelves with but a little ſelect number of advocates for them, and not communicate our myſteries to the vulgar. How, ſays the Marchioneſs, do you call my two laſt viſitants the vulgar? They may have wit enough, ſays I, but they never reaſon at all. And your reaſoners, who are a ſevere ſet of people, will not make any difficulty of ſorting them with the vulgar. On the other ſide, theſe men of fire revenge themſelves by ridiculing the reaſoners; and think it a very juſt principle in nature, that every ſpecies deſpiſes what it wants. It were right, if it was poſſible, to conform ourſelves to every ſpecies; and it had been much better for you to have railed on the inhabitants of the planets with your two friends, becauſe they are better at raillery than reaſoning, which they never make uſe of: You had then come off with their joint eſteem; and the planets had not loſt a ſingle inhabitant by it. Would you have had me ſacrifice the truth to a jeſt? ſays ſhe. And is that all the conſcience you have? I own, anſwered I, that I have no great zeal for theſe kind of truths, and I will ſacrifice them with all my ſoul to the leaſt conveniences of company. For inſtance, I ſee what is, and always will be, the reaſon, why the opinion of the planets being inhabited is not thought ſo probable as it really is: The planets always preſent themſelves to our view as bodies which omit light; and not at all like great plains and meadows. We ſhould readily agree that plains and meadows were inhabited; but for luminous bodies to be ſo too, there is no ground to believe it. Reaſon may come and tells us over and over, that there are plains and meadows in theſe planets, but reaſon comes a day too late; one glance of our eyes has had its effect before her, we will not hear a word ſhe ſays, the planets muſt be luminous bodies, and what ſort of inhabitants ſhould they have, our imagination of courſe would preſently repreſent their figures to us? It is what ſhe cannot do, and the ſhorteſt way is to believe there are no ſuch beings. Would you have me, for the eſtabliſhment of theſe planetary people, whoſe intereſts are far from touching me, go to attack thoſe formidable powers, called ſenſe and imagination? It is an enterprize would require a good ſtock of courage, and we cannot eaſily prevail on men, to ſubſtitute their reaſon in the place of their eyes. I ſometimes meet with reaſonable people enow, who are willing, after a thouſand demonſtrations, to believe that the planets are ſo many earths: But their belief is not ſuch as it would be, if they had not ſeen them under a different appearance; they ſtill remember the firſt idea they entertained, and they cannot well recover themſelves from it. It is theſe kind of people, who, in believing our opinion, ſeem to do it a courteſy, and only favour it for the ſake of a certain pleaſure, which its ſingularity gives them.

WELL, ſays the Marchioneſs, interrupting me, and is not this ſufficient for an opinion, which is but barely probable? You would be very much ſurprized, ſays I, if I ſhould tell you, probable is a very modeſt term. Is it ſimply probable that there ever was ſuch a man as Alexander the great? you hold it very certain that there was, and upon what is this certainty founded? Becauſe you have all the proofs which you could deſire in a like matter? and there does not the leaſt ſubject for doubt preſent itſelf, to ſuſpend or arreſt your determination? for you never could ſee this Alexander, and you have not one mathematical demonſtration that there ever was ſuch a man. Now what would you ſay if the inhabitants of the planets were almoſt in the very ſame caſe? We cannot pretend to make you ſee them, and you cannot inſiſt upon the demonſtration here, as you would in a mathematical queſtion; but you have all the proofs you could deſire in our world. The entire reſemblance of the planets with the earth which is inhabited, the impoſſibility of conceiving any other uſe for which they were created, the ſecundity and magnificence of nature, the certain regards ſhe ſeems to have had to the neceſſities of their inhabitants, as in giving moons to thoſe planets remote from the ſun, and more moons ſtill to thoſe yet more remote; and what is ſtill very material, there are all things to be ſaid on one ſide, and nothing on the other; and you cannot comprehend the leaſt ſubject for a doubt, unleſs you will take the eyes and underſtanding of the vulgar. In ſhort, ſuppoſing that theſe inhabitants of the planets really exiſt, they could not declare themſelves by more marks, or marks more ſenſible; and after this you are to conſider whether you are willing not to take their caſe to be more than purely probable. But you would not have me, ſays ſhe, look upon this to be as certain as that there was ſuch a man as Alexander? Not altogether, Madam, ſays I, for though we have as many proofs touching the inhabitants of the planets, as we can have, in the ſituation we are, yet the number of theſe proofs is not great. I muſt renounce theſe planetary inhabitants, ſays her ladyſhip, interrupting me, for I cannot conceive how to rank them in my imagination; there is no abſolute certainty of them, and yet there is more than a probability; ſo that I am confounded in my notions. Ah, Madam, ſays I, never put yourſelf out of conceit with them for that; the moſt common and ordinary clocks ſhew the hours, but thoſe are wrought with more art and nicety which ſhew the minutes. Juſt ſo your ordinary capacities are

are ſenſible of the difference betwixt a ſimple probability and an evident certainty; but it is only your fine ſpirits that diſcern the exact proportions of certainty or probability, and can mark, if I may uſe the phraſe, the minutes in their ſentiments. Now place the inhabitants of the planets a little below Alexander; yet above many other hiſtorical facts which are not ſo clearly proved: I believe this poſition will do. I love order, ſays ſhe, and you oblige me in thus ranging my ideas for me: But pray, why did not you take this care before? Becauſe, ſays I, ſhould you believe the inhabitants of the planets either a little more or leſs than they deſerve, there will be no great damage in it. I am ſure that you do not believe the motion of the earth ſo fully as it ought to be believed; and have you much reaſon to complain on that ſcore? O! for that matter, replied ſhe, I have diſcharged myſelf very well, you have nothing to reproach me with on that account, for I firmly believe that the earth turns. And, yet, ſays I, Madam, I have not given you the ſtrongeſt reaſons in proving it. Ah! traytor, ſhe cried, to make me believe things upon feeble proofs: Then you did not think me worthy of believing upon ſubſtantial reaſons? I only proved things, ſays I, upon little plauſible reaſons, and ſuch as were adapted to your peculiar uſe: Should I have conjured up as ſtrong and ſolid arguments, as if I had been to attack a doctor in the ſcience? Yes, ſays ſhe, pray take me for a doctor from this moment, and let me have your full demonſtrations of the earth's moving.

WITH all my heart, ſays I, Madam, and I own the proof pleaſes me ſtrangely, perhaps becauſe I think it was of my own finding; yet it is ſo good and natural, that I muſt not preſume poſitively to have been the inventor of it: It is moſt certain, that if a learned man was puzzled, and deſired to make replications to it, he would be obliged to declaim at large, which is the only method in the world to confound a learned man. We muſt grant, that all the celeſtial bodies, in 24 hours, turn round the earth, or that the earth turning on itſelf, imparts this motion to all the celeſtial bodies. But that they really have this revolution in 24 hours round the earth, is a matter which has the leaſt probability in the world, though the abſurdity does not preſently appear to our view. All the planets certainly make their great revolution about the ſun; but theſe revolutions of theirs are unequal, according to the diſtances of the reſpective planets from the ſun; for the moſt remote ones make their courſe in a longer time, which is moſt agreeable to Nature: The ſame order is obſerved among the little ſecondary planets in turning about a great one. The four moons of Jupiter, and the five of Saturn, make their circles in more or leſs time round their great planet, according as they are more or leſs remote. Beſides, it is certain that the planets have motions upon their own centres, and theſe motions likewiſe are unequal; we cannot well tell how to account for this inequality, whether it proceeds from the different magnitudes of the planets, or on the different ſwiftneſs of the particular vortexes which incloſe them, and the liquid matters in which they are ſuſtained;

but, in ſhort, the inequality is moſt undoubted; and ſuch is the order of nature in general, that whatever is common to many things, is found at the ſame time to vary in different particulars.

I UNDERSTAND you, ſays the Marchioneſs, interrupting me, and I think there is a great deal of reaſon in what you ſay; I am entirely of your mind, if the planets turned about the earth, they would do it in unequal ſpaces of time according to their diſtances, as they do about the ſun: Is not that the meaning of what you were ſaying? Exactly, Madam, ſays I, their unequal diſtances, with reſpect to the earth, their different magnitudes, and the different rapidity of the particular vortexes incloſing them, ſhould conſequently produce differences in their pretended motion round the earth, as well as in all their other motions. And the fixed ſtars which are at ſuch a prodigious diſtance from us, and ſo much elevated above every thing that can take a general motion round us, at leaſt which are ſituated in a place whence this motion ſhould be very much weakened, would there not be a very great probability that they did not turn at all about us in 24 hours, as the moon does who is ſo near us? And ſhould not comets, which are ſtrangers in our vortex, and which run courſes ſo different one from the other, and with ſuch unequal rapidity, be excuſed from turning round us in the ſame ſpace of 24 hours? But no matter, fixed ſtars, and comets, and all muſt turn round the earth in 24 hours; yet, if there were ſome minutes difference in theſe motions, we might be contented;

and they all muſt make them with the moſt exact equality, or rather the only exact equality, which is in the world, and not one minute more or leſs allowed. In reality, this matter is ſtrangely ſuſpected.

O, SAYS the lady, ſince it is poſſible that this grand equality ſhould be only in our imagination, I am entirely convinced it is only derived from thence. I am very well pleaſed, that any poſition, which is againſt the genius of Nature, ſhould fall entirely upon ourſelves, and that ſhe ſhould ſtand diſcharged, though at our expence. For my part, ſays I, I am ſuch a foe to a perfect equality, that I cannot even allow all the turns which the earth every day makes on herſelf ſhould be preciſely in 24 hours, and always equal one to another, I ſhould be very much inclined to think that there are variations. Variations! cried the lady, why, do not our pendulums mark an entire equality? O, ſays I, to your pendulums I muſt object, for they cannot be altogether juſt; and ſometimes when they are, in ſhewing us that one circuit of 24 hours is longer or ſhorter than another, we ſhould rather be inclined to believe them irregular, than to ſuſpect the earth of any regularity in her revolutions. What a complaiſant reſpect is this we have for her, I would no more depend on the earth, than on a pendulum! And the very ſame caſualities almoſt which will diſorder the one, will make the other irregular! Only, I believe, there muſt be more time allowed for the earth, than a pendulum, to be viſibly put out of order; and that is all the advantage we can give on her ſide. But might ſhe not by degrees grow nearer to the ſun? And there finding herſelf in a ſituation, where the matter is more agitated, and the motion more rapid, ſhe will in leſs time make her double revolution both about the ſun and herſelf; ſo conſequently her years and days will be much ſhortened, but not to be perceived, becauſe we muſt ſtill go on to divide the year into 365 days, and the day into 24 hours: So that without living longer than we now do, we ſhall live more years; and on the other hand, as the earth withdraws from the ſun, we ſhall live fewer years than we do now, and yet have our lives of the ſame extent. There is a great deal of probability, ſays ſhe, that whenever it falls out thus, long ſucceſſions of ages will make but very little variation. I agree with you, Madam, replied I, the conduct of Nature is very nice, and ſhe has a method of bringing about all things by degrees, which are not ſenſible, but in very obvious and eaſy changes; we are ſcarce able to perceive the change of the ſeaſons, and for ſome others that are made with a certain deliberation, they do not fail to eſcape our obſervance. However, all is in a perpetual rotation, and not ſo much as the lady's face in the moon, which was diſcovered with teleſcopes, within theſe 40 years, but what is grown conſiderably old. She had a good tolerable countenance, but now her cheeks are ſunk, her noſe grown long, and her chin and forehead meet, ſo that all graces are vaniſhed, and age has made her a terrible ſpectacle.

WHAT a ſtory do you tell, ſays the lady, interrupting me! It is no impoſition, Madam, replied I, they have perceived in the moon a particular figure, which had the air of a woman's head jutting out of rocks, and it is owing to ſome change that has happened there. Some pieces of mountains have mouldered away, and left us to diſcover three points, which can only ſerve to make up the forehead, noſe, and chin of an old woman. Well, ſays ſhe, but do not you think it is ſome deſtiny that had a particular ſpite to beauty? And very juſtly it was this female head, which ſhe would attack above all the moon. Perhaps in recompence, replied I, the changes which happen upon our earth dreſs out ſome face, which the people in the moon ſee; I mean ſomething like what we conceive a face in the moon; for every one beſtows on objects thoſe ideas of which they themſelves are full. Our aſtronomers ſee, in the ſurface of the moon, the faces of women, and may be, if the ladies were to make their ſpeculations, they would diſcern the phyſiognomy of fine men. For my part, Madam, I do not know whether I ſhould not fancy your ladyſhip's charms there. I proteſt, ſays ſhe, I cannot help being obliged to any one who ſhould find me there. But to come back to what you were mentioning juſt now: Do any conſiderable changes affect the earth? In all appearance they do, replied I: Old fables tell us, that Hercules ſplit aſunder with his hands the two mountains called Calpe and Abila, which ſtand betwixt Afric and Spain, ſtopped the ocean from flowing there, and that immediately the ſea ruſhed with violence over the land, and made that great gulph, which we call the Mediterranean. Now this is not only fabulous, but a hiſtory of thoſe remote times, which has been diſguiſed, either from the ignorance of the people, or through the love they had for the marvellous, the two moſt ancient frailties of mankind. That Hercules ſhould ſeparate two mountains with his two hands, is abſolutely incredible; but that in the time of one Hercules or other, for there were 50 of that name, the ocean ſhould force down two mountains, not ſo ſtrong as others in the world, perhaps through the aſſiſtance of ſome earthquake, and ſo take his courſe betwixt Europe and Afric, gives me no manner of pain to believe. What a notable ſpot might the lunar inhabitants all of a ſudden diſcover on our earth; for you know, Madam, that ſeas are ſpots. It is no leſs than the common opinion, that Sicily was ſeparated from Italy, and Cyprus from Syria: There are ſometimes new iſlands formed in the ſeas: Earthquakes have ſwallowed up mountains, others have roſe and altered the courſe of the planets. The philoſophers give us apprehenſions, that the kingdoms of Naples and Sicily, which are countries founded upon great ſubterranean vaults, full of ſulphur, will one day ſink in, when thoſe vaults ſhall no longer be able to reſiſt the flames which they contain, and at this time exhale at thoſe vent holes the mouths of Veſuvius and Ætna. Is not here enough to diverſify the ſight which we give to the people in the moon?

I HAD much rather, ſays the Marchioneſs, that we had diſguſted them with the ſame object always, than diverted them with the ſwallowing up of provinces.

I DO not know, replied I, if within this little time there have not been ſeveral burnt up in Jupiter. What, provinces burnt up in Jupiter! cries ſhe, upon my word, that would be very conſiderable news. Very conſiderable, ſays I, Madam: We have remarked theſe 20 years in Jupiter a long trail of light more glaring than the reſt of that planet's body. We have, here, had deluges, perhaps they may have ſuffered great conflagrations in Jupiter: How do we know to the contrary? Jupiter is 90 times bigger than the earth, and turns on his own centre in 10 hours whereas we do not turn in leſs than 24, which implies that his motion is 216 times ſtronger than ours. May it not be poſſible, that in ſo rapid a circulation, its moſt dry and combuſtible parts ſhould take fire, as we ſee the axle-trees in wheels, from the rapidity of their motion, will break out into flames? But however it is, this light of Jupiter is by no means comparable to another, which in all probability is as antient as the world, and yet we have never ſeen it. How does a light order it to be concealed? ſays ſhe; there muſt be ſome ſingular addreſs to compaſs that point.

THIS light, replied I, never appears but at twilight, which is often ſtrong enough to drown it; and even when twilight ſuffers it to appear either the vapours of the horizon rob us of it, or it is ſo very faint, and hardly to be perceived, that for want of exactneſs in our knowledge we miſtake it for the twilight. But, in ſhort, they have of late years with much certainty diſtinguiſhed it; and it has been for ſome time the delight of the aſtronomers, whoſe curioſity wanted to be rouſed by ſome novelty, and they could not well have been more touched, if they had diſcovered ſome new ſecondary planets. The two latter moons of Saturn, for inſtance, did not raviſh them to that degree which the guards or moons of Jupiter did: But now we are fully accuſtomed to it; we ſee, one month before, and after, the vernal equinox, when the ſun is ſet, and the twilight over, a certain whitiſh light, reſembling the tail of a comet. We ſee the ſame before ſun-riſe, and before the twilight, towards the autumnal equinox; and towards the winter ſolſtice we ſee it night and morning, except at theſe times it cannot, as I but now obſerved, diſengage itſelf from the twilights which are too ſtrong and laſting; for we ſuppoſe it to be a continued light, and in all probability it is ſo. We have begun to conjecture that it is produced from ſome prodigious quantity of matter crouded together, which circles round the ſun to a certain extent: The greateſt part of his rays pierce through this groſs circuit, and come down to us in a right line; but ſome reſting on the inner ſurface of this matter, are from thence reflected to us and come with the direct rays, or elſe we cannot have them either morning or evening. Now as theſe reflected rays are ſhot from a greater height than thoſe which are direct, we muſt conſequently have them ſooner, and keep them longer.

On this foot, I muſt acquieſce in what I have already mentioned, that the moon muſt have no twilight, for want of being ſurrounded by ſuch groſs air as the earth. But ſhe can be no loſer; her twilights will proceed from that kind of groſs air which ſurrounds the ſun, and reflects his rays on places which his direct ones cannot reach. But pray let me know, ſays the Marchioneſs, are not there twilights ſettled for all the planets, who will not need every one to be clothed with a diſtinct groſs air, becauſe that which ſurrounds the ſun alone, may have one general effect for all the planets in the vortex? I am mighty willing to think, dame Nature, agreeable to that inclination which I know ſhe has to œconomy, and good management, ſhould make that ſingle means anſwer her purpoſe: Yet, replied I, notwithſtanding this ſuppoſed œconomy, ſhe muſt have, with reſpect to our earth, two cauſes for twilight; one whereof, which is the thick air about the ſun, will be wholly uſeleſs, and can only be an object of curioſity for the ſtudents of the Obſervatory; but not to conceal any thing, it is poſſible that only the earth ſends out from herſelf vapours and exhalations groſs enough to produce twilights, and that Nature had reaſon to provide, by one general means, for the neceſſities of all the other planets, which are, if I may ſo ſay, of a purer mould, and their evaporations conſequently more ſubtle. We are perhaps, among all the inhabitants of the worlds in our vortex, the only perſons who required to have a more groſs and thick air given us to breathe in. With what contempt would the inhabitants of the other planets conſider us, if they knew this!

THEY would be out in their reaſoning, ſays the Marchioneſs, we are not to be deſpiſed for being enveloped with a thick air, ſince the ſun himſelf is ſo ſurrounded. Pray tell me, is not this air produced by certain vapours, which you have formerly told me iſſued from the ſun, and does it not ſerve to break the firſt force of his rays, which had elſe probably been to exceſs? I conceive that the ſun may be veiled by Nature, to be more proportioned to our uſe. Well, Madam, replied I, this is ſome ſmall introduction to a ſyſtem which you have happily ſtarted. We may add, that theſe vapours produce a kind of rain, which falling back upon the ſun, may cool and refreſh it, as we ſometimes throw water into a forge, when the fire is too fierce. There is not any thing but what we may imagine, to aſſiſt Nature's addreſs but ſhe has another kind of addreſs very particular, which is to conceal herſelf from us, and we ſhould not willingly be confident that we have found out her method of acting, or her deſigns in it: In caſe of new diſcoveries, we ſhould not be too importunate in our reaſonings, though we are always fond enough to do it; and your true philoſophers are like elephants, who as they go, never put their ſecond foot to the ground till their firſt be well fixed. The compariſon ſeems the more rational to me, ſays ſhe, as the merit of thoſe ſpecies of animals, elephants and philoſophers, does not all conſiſt in exterior agreements. I am willing to miſtake the judgment of both; now teach me ſome of the latter diſcoveries, and I promiſe you not to make any raſh ſyſtems.

I WILL tell you, Madam, replied I, all the news I know from the firmament, and I believe the freſheſt advice you can have. I am ſorry they are not as ſurprizing and wonderful, as ſome obſervations which I read the other day in an abridgment of the Chineſe annals, written in Latin. Thoſe people ſee thouſands of ſtars at a time fall from the ſky into the ſea, with a prodigious noiſe, or are diſſolved, and melt into rains; and theſe are things which have been ſeen more than once in China. I met with this obſervation at two ſeveral times, greatly diſtant from each other, without reckoning a certain ſtar which goes eaſtward, and burſts like a ſquib, always with a great noiſe. It is a great pity that theſe kinds of phœnomena ſhould be reſerved for China only, and that our part of the globe ſhould never have their ſhare of theſe ſights. It is not long, ſince all our philoſophers were of opinion, that they might affirm on good grounds, that the heavens and all the celeſtial bodies were incorruptible, and therefore incapable of change; and yet at the ſame time, there were ſome men in the other part of the earth who ſaw the ſtars diſſolve by thouſands, which muſt produce a very different opinion. But, ſays the Marchioneſs, did we ever hear it allowed that the Chineſe were ſuch great aſtronomers? It is true, we did not, ſays I, but the Chineſe have an advantage from being divided from us by ſuch a prodigious tract of earth, as the Greeks had over the Romans, by being ſo much prior in time: Diſtances of every ſort pretend a right of impoſing on us. In reality, I think ſtill more and more, that there is a certain genius which has never yet been out of the limits of Europe, or at leaſt not much beyond them; perhaps he may not be permitted to ſpread over any great extent of the earth at once, and that ſome fatality preſcribes him very narrow bounds. Let us indulge him whilſt we have him; the beſt of it is, he is not linked to the ſciences and dry ſpeculations, but launches out with as much ſucceſs into ſubjects of pleaſure, in which point I queſtion whether any people equal us. Theſe are ſuch topics, Madam, as ought to give entertainment, and complete your whole ſyſtem of philoſophy.

A N
ORATION in DEFENCE
OF THE
New PHILOSOPHY.

Spoken in the Theatre at Oxford, July 7th, 1693,

By Mr. ADDISON.

Done from the Latin Original.

HOW long, gentlemen of the univerſity, ſhall we ſlaviſhly tread in the ſteps of the ancients, and be afraid of being wiſer than our anceſtors? How long ſhall we religiouſly worſhip the triflings of antiquity, as ſome do old wives ſtories? It is indeed ſhameful, when we ſurvey the great ornament of the preſent age*, to transfer our applauſes to the ancients, and to take pains to ſearch into ages paſt for perſons fit for panegyric.

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* Newton.

The ancient philoſophy has had more allowed than it could reaſonably pretend to; how often has Sheldon's theatre rung with encomia on the Stagyrite, who greater than his own Alexander, has long, unoppoſed, triumphed in our ſchool-deſks, and had the whole world for his pupils. At length roſe Carteſius, a happier genius, who has bravely aſſerted the truth againſt the united force of all oppoſers, and has brought on the ſtage a new method of philoſophizing. But ſhall we ſtigmatize with the name of novelty that philoſophy, which, though but lately revived, is more ancient than the Peripatetic, and as old as the matter from whence it is derived? A great man indeed he was, and the only one we envy France*, He ſolved the difficulties of the univerſe, almoſt as well as if he had been its architect. He deſtroyed thoſe orbs of glaſs, which the whims of antiquity had fixed above, brought light to that troop of forms till then unknown, and has almoſt extinguiſhed the element of fire; nay, he with ſo much clearneſs traced out the whole maſs of matter, as to leave no occult quality untouched. This philoſopher ſcorned to be any longer bounded within the ſtraights and chryſtalline walls of an Ariſtotelic world; no, his delight is to ſearch the regions above, to diſcover new ſuns and new worlds, which lay hid among the ſtars; his ſatisfaction is to view that large kingdom of air amidſt the unfixed ſtars, and lands that paſs the milky-way, and more accurately meaſure this vaſt machine, a machine fit for mankind to philoſophize on, and worthy of the Deity, that firſt framed it.

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* Deſcartes.

Here we have not only new heavens opened to us, but we look down on our earth; this philoſophy affords us ſeveral kinds of animal: where, by the help of the microſcopes, our eyes are ſo far aſſiſted, that we may diſcern the productions of the ſmalleſt creatures, while we conſider with a curious eye the animated particles of matter, and behold with aſtoniſhment the reptile mountains of living atoms. Thus are our eyes become more penetrating by modern helps, and even that work which Nature boaſts for her maſter-piece is rendered more correct and finiſhed. We no longer pay a blind veneration to that barbarous Peripatetic jingle, thoſe obſcure ſcholaſtic terms of art, once held as oracles, but conſult the dictates of our own ſenſes, and by late invented engines force Nature herſelf to diſcover plainly her moſt hidden receſſes.

By the help of inſtruments like theſe, that air, which a bountiful nature has indulged us, we as often as we pleaſe, by the force of art, abridge other animals of, and keep them in our pnuematic pumps, from its common benefit. What a pleaſure is it to ſee the fruitleſs heavings of the lights, to exhauſt their lives, and by a moſt artful ſort of theft rob them of their breath! From this nothing is ſafe, nothing ſo long lived, which gradually does not languiſh, and fall dead without a wound. A divine piece of art this, and worthy of its author *, who, in the conduct of his life, and the force of his arguments, has ſo nobly honoured our nation, and the new philoſophy, one who for this reaſon too deſerves never to want the benefit of his own air, or that he, who has ſo often deprived other animals of their life, ſhould ever breathe out his own.

On no ſuch grounds as theſe has Ariſtotle built his philoſophy, who from his own brain furniſhed out all his rules of arts and ſciences, and left nothing untouched on, nothing unregarded but truth. If therefore he precipitated himſelf into the river Euripus, becauſe he could not underſtand its ebb and flow, by the ſame logic he might at his firſt entrance on philoſophy have deſtroyed himſelf; and we may fairly doubt, in which of the elements he ought to have periſhed.

After Ariſtotle's fate amidſt the waves of Euripus, a new race of Peripatetics ſtarted up, even worſe than their founder, who handed their philoſophy to after-ages in ſo thick an obſcurity, that it has preſerved it from the ſatire and ridicule of all mankind, as underſtood by very few. Some there are to be found, who ſpend their time amidſt the rubbiſh which thoſe commentators have filled the world with, and pore more than once on theſe god-like treaſures of

learning

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* Boyle.

learning, and ſtick to them to no purpoſe, unleſs to ſhew the world the vaſt pains they take to be deceived. Can there be a more pleaſant ſight than to ſee theſe wiſe champions wrangling with each other? The one, armed with propoſitions and ſyllogiſms, attacks his antagoniſt in the ſame armour: Both bell-weathers grow angry, and ſtorm, fond of a victory, which is worth but a trifle, when obtained: Each, with all his might, darts out his barbariſms at the other, they entangle themſelves in their follies, and as neither knows how to extricate himſelf, they ſound a retreat, and when all the ammunition is ſpent on both ſides, they think fit to keep ſilence.

THUS far, gentlemen, and no farther, launches out the ancient philoſophy: Let us therefore ſentence for ever this troop of commentators, to be tied up in chains and libraries, food only for moths and worms, and there let them quietly grow old, free from the ſight of any reader.

JOSEPH ADDISON.

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